

MOTOR AGE

CARS SHOW REMARKABLE SPEED ON PARKWAY

NEW YORK, Oct. 10—By a monster speed carnival, in which all previous American road records were surpassed and stock cars of many makes scored amazing figures in a motoring battle-royal, the Long Island motor parkway was inaugurated last Saturday as a racing course, whereon for all time, without breaking any laws and with safety to contenders and spectators, motor cars may be driven in competition or for pleasure. The assured and partially realized establishment of this great motor speedway and parkway, the results of today's contests and the possibilities of the course as a trial ground mark the beginning of an era that will mean much to the advancement of the American industry and the popularity of the motor car as a high speed pleasure vehicle. The successful inaugural of the parkway also gives promise in the class of the contenders and in the comparative speed results of a Vanderbilt race on October 24 that will mean no loss of prestige to America's great classic.

The outcome proved the practicability of the innovation of combining several contests among variously graded machines at different distances and set a fashion that is likely to be frequently followed in future long distance stock car races on the road. Endurance runs under varied or average highway conditions as tests of serviceability and hill-climbs as proof of power under grade emergencies, are convincing to many, but it is doubtful whether the arbitrament of sustained speed over long distance does not appeal more strongly to the majority. This has been European experience. The selling success that has followed notable speed successes in this country would seem to confirm to a considerable extent the European idea. Hitherto it has been sought



SCENE AT THE START
THE ISOTTA

to supply the fancied want by track contests, but their practical results have paled by comparison with those of such great road races as the Vanderbilt, the Savannah, the Briarcliff, and the Lowell. The building of the motor parkway is a great step toward furnishing this form of test; in fact, the

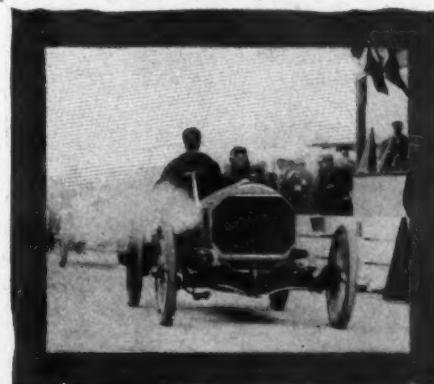
Long Island cement stretch has actually solved the problem of a safe and lawful speed motor arena.

While interest was naturally greatest among the general public in the contention of the cars of the highest price and power, the struggles of those of lesser value were closely followed

by those who looked to the series of sweepstakes to furnish evidence of the relative speed and road qualities of the various models and price classes in a word by the members of the motor cult whose choice and purchase are affected by such motor car demonstrations.

The big race of the day, of course, was the motor parkway sweepstakes, whose finish came after the contenders in the other five sweepstakes had run their course, gathered their respective laurels, and earned their thousand-dollar prizes. It had added interest from the fact that its list embraced several prominent Vanderbilt cup cars and drivers. There were Herbert Lytle, who is a well-known Vanderbilt Pope-Toledo driver and successfully piloted an Apperson at Savannah, at the wheel of Clifford V. Brokaw's Isotta; Lewis Strang, probably well entitled to be called the American road champion, who has just been retained permanently by Paul La Croix, in the Renault, Charles Basle in the Knox, which finished second in the Lowell race; F. Lescault with the Simplex, that captured the last Brighton Beach 24-hour race, and Willie Haupt and the Chadwick he had driven so successfully in the present season's hill climbs.

Lewis Strang through his victories with the Isotta in the Savannah, Briarcliff and Lowell contests, and George Robertson by his win of the Brighton Beach 24-hour race and his more recent triumph at Philadelphia, have earned the premiership among



SHARP-ARROW, THE DARK HORSE



FINISH OF LYTHE IN ISOTTA, WINNER OF BIG EVENT

our drivers in critical and public estimation. The outcome of the motor parkway sweepstakes easily places Herbert Lytle on a par with these two and assures America of a trio instead of a duo of drivers in the international races at hand that bid fair to give as good an account of themselves against the foreign cracks as did Joe Tracy in the Locomobile in the last Vanderbilt race. Under Lytle's brilliant pilothage the Isotta added the motor parkway sweepstakes to its Savannah, Briarcliff, and Lowell cups, and incidentally annexed a new American long distance road record as well. It covered the ten laps of the 23:46 mile course, 234.6 miles, in 219 minutes 10 seconds. It averaged 64.25 miles an hour as compared with the best previous American average of 61.43 miles scored by Wagner, when he won the 1906 Vanderbilt cup race with the Darracq.

Lewis Strang made a game chase with the Renault, tying the Isotta the first lap, but from that point on being gradually and very slowly outfooted, finishing 11 minutes 15 seconds behind the Italian car. Strang had made the run in 230 minutes 25 seconds and scored an average of 61.20 miles per hour, which was but a shade under Wagner's former record. The Itala was third, the Simplex fourth, and the Chadwick fifth. The Knox and Hotchkiss completed but six and five laps respectively.

The Meadow Brook sweepstakes at 211.14 miles, for cars from \$3,001 to \$4,000, fell to the Allen-Kingston, driven by H. Hughes, a car that has made heretofore most of its reputation in short and long distance track events. It made the run in 249.11, averaging 52.6 miles per hour. Mrs. Joan Newton Cuneo's Rainier, of Glidden tour fame, piloted by L. A. Disbrow, ran a creditable second in 243 minutes 42 seconds, an average of 52.2 miles per hour. The Lancia, driven by W. M. Hilliard, was third in 264 minutes 15 seconds, and averaged 47.9 miles. This car claimed the smallest cylinders, 3½ bore by 3¾ stroke, of any in the race, except the Nassau little fellows. It made the 211.14-mile run in its class on 13 gallons of gasoline.

Another newcomer to the metropolis, a Sharp-Arrow, so new and so insignificant from the point of production, being the creation of a Trenton, N. J., enthusiast, as to be looked upon as a free lance. W. H. Sharp, who drove it, walked away with the Garden City sweepstakes at 187.68 miles in 199 minutes 34 seconds, an average of 56.4 miles an hour. As a matter of fact this average was beaten by only two cars in the entire sweepstakes, the Isotta and the Renault. The Sharp-Arrow is an assembled car with a Continental engine. There was talk after the race of a protest of the car on the ground that there had not been a sufficient product to comply with the stock car rules requirements. It was stated at its supply pit, however, that forty of the cars had been produced. William Bourque's Knox, which is entered for the Vanderbilt cup, finished second in 249 minutes 11 seconds, with an average of 45.2 miles an hour for the race.

The two Chalmers-Detroit candidates for the Jericho sweepstakes, for cars from \$1,001 to \$2,000, made a most successful and impressive racing debut. They ran

first and second and were driven respectively by W. H. Burns and J. D. Ainslie. The winner covered the 140.76 miles in 182 minutes 36 seconds, an average of 48.65 miles per hour. The average of the second to finish was 46.1. Their nearest pursuers were a pair of Mitchells.

Among the little fellows in the Nassau sweepstakes, for cars of \$1,000 and under, the Buick had it pretty much all its own way, making the 93.84 miles run in 127 minutes 52 seconds, an average of 44.1 miles per hour.

The contest of the tires was also closely watched. It was Michelin's day; for Michelin tires were on the Isotta and Renault, the first and second in the big race, and on the winning Allen-Kingston, Sharp-Arrow and Buick. Diamonds scored first and second in the Jericho sweepstakes with the Chalmers-Detroit pair.

The meet was remarkably free from accidents of all kinds either to men or machines, considering the large number of starters. In fact, but one participant was injured. In rounding a curve a Stoddard-Dayton, driven by A. C. Miller, threw off its mechanic, William La Motte, breaking his arm. Another Stoddard-Dayton, with K. Wright at the wheel, was ditched and put out of the race in the first lap. A Palmer & Singer, piloted by Ray Howard, was put out of the race by running into a fence, but neither of its crew was injured. The Chalmers-Detroit 40, which L. B. Lorimer drove, ran into a dog and broke its radiator. The latter leaked so badly that the car discontinued the contest. Two instances were reported of spectators being hit by flying pieces of metal or wood as the cars rounded the turns.

The management of the race by the A. A. A. and motor parkway officials was excellent, William K. Vanderbilt, Jr., acting as referee. The protection of the spectators was efficient. There was a large corps of Pinkerton men along the homestretch in the neighborhood of the grand stand. At other points of the route were stationed deputies, a large number in the aggregate. The parkway cement stretch was well protected by a high wire fence, though this stretch runs for most of the way through the barren Hempstead plain and really was too isolated to be in danger of congested crowds anyhow. Flagmen encircled the outer course to signal the drivers.

At the start and finish the Motor Parkway company had erected a monster permanent stand seating 5,000 people, and opposite thereto a two-story structure for officials and newspaper men. At the front of the grand stand were several rows of commodious boxes, behind which seats rose in tiers to the great roof, in itself an innovation for racing stands. The front of the stand and boxes was hung with purple cloth; festoons of the shields and flags of all motor car racing nations, surmounted the pillars; and above the roof floated great American flags.



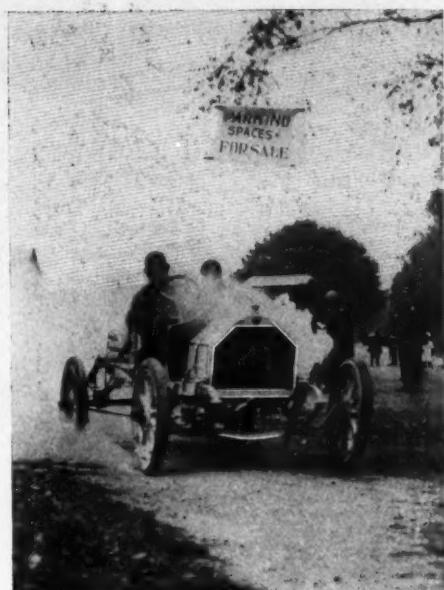
CAMERON, ONLY AIR-COOLER

The official and press stand was most complete in its equipment. Above were score boards for each sweepstakes. The main floor was given over to long tables for the newspaper men. Behind them were booths for the telegraph operators and fifteen telephones. The officials had a compartment to themselves at the tape end, and in the corner was a most hospitable bar. In the second story were Charles J. Dieges and S. M. Butler and other members of the New York Times' Club, who looked after the clocking; the scorers' tables, and provided benches and desks for the press.

The most novel and interesting part of the homestretch equipment, however, was the row of supply pits that stretched in front of the grand stand for its entire length. There was space enough between the pits and the track for racing cars to stop for their supplies. Mountains of tires were dumped into the pits in the aggregate, to say nothing of rivers of gasoline and oil. It was highly interesting to watch the crews take on their supplies and make their adjustments. There were at times repairs made that were of hitherto unaccustomed frankness. It is safe to say, however, that when possible the more serious work was reserved for the other official supply station on the backstretch. So far as the grand stand pits showed, however, there seemed remarkably little repairing and adjusting to be done.

In front of the grand stand stretched the long broad ribbon of white cement, plain to the view for a mile in either direction. To the west it approached over a hill that bridged an intersecting highway and disappeared to the east beneath a bridge that furnished a crossing for another road. The surface of the cement was roughed to prevent skidding and at the turns the path was well banked. There had been fears that the rough surface would prove hard on tires. This turned out not to be so. On the contrary there was less tire trouble reported than at any former road race. In fact, Peter Prunty's once familiar announcement, "Stopped by tire troubles" was heard only occasionally.

So smoothly and swiftly did the racing cars speed over the level surface of the parkway stretch that some pilots were forced into the belief that their machines were not making as rapid progress as they did over the smooth country roads that made up two-thirds of the circuit. In fact, Herb Lytle stoutly maintained that the Isotta traveled 10 miles an hour faster over the backstretch than it did over the parkway. The truth is the monotony of speeding over an uniform surface and the absence of any resistance or necessity for swerving to pick a path deceived the pilots. One has heard the novice drivers over Ormond beach complain that they were disappointed in the speed the beach gave. The watch soon undeceived them just as undoubtedly they would were the time taken over the parkway stretch. It would, by the



CHALMERS-DETROIT UNDER WAY

way, be most interesting at the Vanderbilt cup race could there be devised some way of getting and announcing the times the cars made from the beginning to the end of the racing stretch, or from its start to the grand stand.

The start for the race from town began before daylight for the general public. The Long Island railroad had arranged for a big and frequent train service. The first was advertised to leave at 5 o'clock. It was fully a half an hour late in starting and was made up of seven cars only fairly well filled. The early race goers were dumped out on a siding behind the stand with a quarter of a mile walk across the meadows ahead of them. When they reached the stand only A. R. Pardington and a few employes and Pinkertons were on the ground. Soon, however, motor cars began to arrive coming down the course from the toll gates and took their stations on the broad borders on either side of the path. The distant bridge soon filled with cars, whose owners had framed up this fine viewpoint. Before the race began there were perhaps a hundred cars between the

grand stand and the bridge. The grand stand was slow in filling. To tell the truth, it did not nearly fill. There were spectators in perhaps half the boxes and a thousand or so in the seats. The crowd was swallowed up by the monster stand. In a word, the attendance at the start and finish point was decidedly disappointing. Along the country highway section of the course there were thousands of people and hundreds of cars in the aggregate. That the grand stand was isolated in an unknown district, that big fees were charged for seats and parking spaces, that the view points elsewhere on the course were free, and that the sweepstakes being merely a curtain-raiser to the near-at-hand Vanderbilt race suffered by comparison so greatly as to injure the attendance, were among the guesses given for the patronage of the center point of the struggle being so unexpectedly small. Some thought that the splitting of the race into subdivisions, while novel and interesting from a trade standpoint, lacked the concentrated attraction of a single contest, from which a single individual winner was to be evolved.

At 8 o'clock, an hour before the time set for the start, Fred J. Wagner, the official starter, arrived and set to work to get the racers into line. It was an easy task for this experienced hustler to line them up in a double row with the even numbers on one side and the odd on the other, the various classes or sweepstakes following one another in the order set for their start.

Just before this Referee Vanderbilt had driven up in a big touring car with three friends. He wore a long overcoat instead of the usual natty "knickers" and Norfolk jacket. It was an overcoated and fur-wrapped crowd. A chilling wind blew stiffly from the north and officials and spectators promenaded briskly to keep warm. The shivering newspaper men found writing hard with benumbed fingers. The drivers had a cold ride ahead of them.

In the throng along the homestretch were many men prominent in the sport



ALLEN-KINGSTON, WINNER OF MEADOW BROOK, TAKING A GRADE



JEFFERSON DE MONT THOMPSON

and industry. With so many makes of cars represented their backers alone made quite a noteworthy array of trade leaders. There were conspicuous evidences of a truce in the racing war, if not an end to it altogether. A. A. A. and A. C. A. officials were both on hand and commingling in apparent fraternity. The rival chairmen, Thompson and Morrell, chatted cordially together, and Secretary Butler busied himself with preparations for the timing and scoring with as much hustle as though the scene was Savannah and the Automobile Club of America's grand prize was about to be started.

Sharp at 9 o'clock "Wag" with Char-



No. 11 CHALMERS-DETROIT, WITH ISOTTA CATCHING UP.

ley Dieges and Sam Butler at his side, the former holding a big ship chronometer and the latter with notebook in hand, sent away the first of the little fellows, a Mitchell, a candidate for the Nassau. The other Nassauvians were started at $\frac{1}{2}$ -minute intervals. The first of the Jericho outfit was started at 9:05, the Garden City at 9:10, the Meadow Brook at 9:15, and the Parkway at 9:20, the cars in each leaving at the same $\frac{1}{2}$ -minute intervals. But four of the thirty-seven entrants failed to face the starter. They were the Garford, Pennsylvania, Cleveland and Moon cars.

The first car to complete a lap was the Buick. It had gotten by the Gyroscope and Mitchell, and made the 23.46-mile round in 30:55. A string of cars followed at short intervals and so fast that the announcer and the tally sheet keepers in the press box were soon lost in the shuffle. There was confusion for a few minutes, and then "Hank" Caldwell, A. B. Tucker and others came to the rescue with score slips which they read aloud. Even after

that it meant lively hustling for the scribes to keep tally of the race, so fast and frequent was the passing of the cars. Even in the first two laps cars overtook and passed cars of the sweepstakes starting ahead of them. The best battles of all the classes were those of the little fellows in the Nassau and the big 'uns in the parkway.

In the early stages of the race the duel between the Isotta and the Renault was intensely exciting. Lytle and Strang were tied to a second the first round, but the next lap the former Pope pilot gained some 3 minutes on the three-cup winner, Strang. The Italian car, as a matter of fact, pulled away from the French machine at an average rate of a minute a lap, though Strang reduced Lytle's lead to 4 minutes in the seventh round. The Knox gave Lytle and Strang a close run for the leadership in the first round, but after that dropped back into the ruck. The Itala got into third place in the fourth round and was never dislodged therefrom to the finish. The Hotchkiss

RESULTS IN THREE OF THE SWEEPSTAKES RUN ON THE LONG ISLAND MOTOR PARKWAY.

MOTOR PARKWAY SWEEPSTAKES, 234.6 MILES											Total	Avg.	miles per hr.	
No.	Car	Driver	1	2	3	4	5	6	7	8	9	10	time	
P42	Isotta	Herbert Lytle	1											
P46	Renault	Lewis Strang	22.17	43.42	65.06	86.25	107.49	129.00	154.09	176.09	197.30	219.10	3:39:10	64.25
P47	Itala	G. Lechleiter	22.17	46.26	69.34	92.35	115.29	138.10	160.37	183.15	205.48	230.25	3:50:25	61.20
P43	Simplex	F. Lescault	25.56	51.23	76.30	101.10	126.11	153.02	178.21	203.23	228.15	253.09	4:13:09	55.6
P41	Chadwick	W. Haupt	34.30	58.27	81.22	111.22	135.02	158.20	181.45	205.12	228.57	256.21	4:16:21	55.0
P45	Knox	Charles Basle	26.13	50.35	75.43	103.16	127.51	154.32	192.49	220.24	244.03	267.57	4:27:57	52.7
P44	Hotchekiss	J. Kilpatrick	22.46	71.01	137.03	173.30	214.23	252.36	.....	.....	.....	.....	.....	.....

23.46 47.19 10.55 93.58 116.48
TOTAL DISTANCE CROSSED: 211.14 MILES

MEADOW BROOK SWEEPSTAKES, 211.14 MILES											Total Av. miles per hr.			
No.	Car	Driver	1	2	3	4	5	6	7	8	9	10		
M35	Allen-Kingston,	H. Hughes	25.33	54.30	79.11	103.19	127.17	164.15	188.42	214.23	240.47	....	4:00:47	52.6
M32	Rainier,	L. A. Disbrow	27.44	55.27	83.16	110.16	137.20	164.13	190.54	217.32	243.42	....	4:03:42	52.2
M34	Lancia,	W. M. Hilliard	29.42	58.35	86.45	114.52	149.08	177.48	206.05	235.08	264.15	....	4:24:15	47.9
M36	Ranier,	Axel Peterson	28.14	75.14	104.09	130.12	156.14	182.14	208.02	233.24	....	....	....	....

GARDEN CITY SWEEPSTAKES, 187.68 MILES



BRIDGE OVER CEMENT PATH, PACKED WITH PEOPLE

was never dangerous after the third lap. The Chadwick put up a good fight for third place for six rounds, but after that was passed by the Simplex.

Though the Allen-Kingston led all the way in the Meadow Brook, the Rainier, a newcomer in the racing field, gave it a pretty good rub from start to finish, being beaten out by less than 3 minutes. The little Lancia did wonderfully fast work, considering its small cylinders. Hilliard negotiated the laps in the "28s" practically the entire way, but this was not quite fast enough to win in company so much higher powered.

The Sharp-Arrow had things practically all its own way after two laps in the Garden City, and well it might, for it proved itself second in speed only to the Isotta and Renault. Its runaway, however, did not come until the third lap, for Burman in the Buick, Lorimer in the Chalmers-Detroit and Howard in the Palmer & Singer all led it to the first lap. In fact, Howard led his field for two laps until the Palmer & Singer met with its accident and had to quit, its time having been 23:42 for the first and 46:29 for the second lap, as against 24:48 and 49:19 for the Sharp-Arrow.

The Chalmers-Detroit pair had the

Jericho practically all to themselves, the only car to dispute their leadership and continue the race to the end being a Mitchell, driven by Frank Zirbies.

The Nassau was the merriest of merry scrambles, from which Hugh Easter and his Buick emerged a leader at every lap of the biggest field of the whole race, thus atoning largely for the disappointment Mr. Durant had experienced in Robert Burman's failure to win the Garden City.

Technical Side of the Try-Out

Although it was scheduled as a race and presented to the public as an event of this character, last Saturday's canter round the Long Island course, preliminary to the holding of the Vanderbilt cup race on the 24th, was in reality a competitive try-out of new models where a number of the entrants were concerned—the first on the slate for the new cars of next season, as well as the first of its kind ever held in this country. American manufacturers maintain a high standard where what is known as the "trying-out" process is concerned, and before receiving the final seal of approval, a model is usually run a year or more on experimental work, while each replica of the standard thus evolved is given a thorough running-in by



W. K. VANDERBILT, JR.

the factory tester before it goes to the body shop and thence to its new owner, but what makers have been hankering after has been an opportunity of trying out their new productions each year in competition with the cars of other makers. This the sweepstakes events held on the Long Island motor parkway and adjacent roads last Saturday provided in hitherto unprecedented manner. True, there were some that were not new models, mostly in the foreign entries, but the majority came under this head and the performance of the various entrants gave prospective purchasers an excellent opportunity of judging of the merits of the new productions of quite a number of makers. It was essentially a battle of four-cylinder cars throughout. With the exception of the Chadwick, there was not another six-cylinder to score in the results.

HOW THE SMALLER CARS PERFORMED IN THE SWEEPSTAKES ON THE MOTOR PARKWAY

JERICHO SWEEPSTAKES, 140.76 MILES

No.	Car	Driver	1	2	3	4	5	6	Total time.	Fastest lap.	Average Av. miles per hr.
J11—Chalmers, W. R. Burns.....	29.10								27:57	30:26	48.65
J16—Chalmers, G. J. Ainslie.....	39.26	57.07	87.41	119.08	150.31	182.36	3:02:36	24:57	32:03	46.1	
J18—Mitchell, F. Zirbes.....	49.01	64.23	96.28	128.52	161.25	192.00	3:12:00	32:18	37:46	39.2	
J13—Maxwell, Charles See.....	50.54	87.45	123.55	156.13	189.04	226.07	3:46:07	28:24	.....	.....
J15—Selden, Charles Young.....	29.42	180.54	109.18	.....	.....	.....	.....	29:42	.....	.....
J12—Mitchell, C. A. Kerchoff.....	53.57	63.14	.....	.....	.....	.....	.....	53:57	.....	.....

NASSAU SWEEPSTAKES, 93.84 MILES

No.	Car	Driver	1	2	3	4	5	6	Total time.	Fastest lap.	Average Av. miles per hr.
N3—Buick, Hugh Easter.....	30.55	67.10	97.23	127.52	.....	.....	2:07:52	30:55	31:58	44.1
N4—Cameron, F. F. Cameron.....	33.54	67.59	101.54	135.52	.....	.....	2:15:52	33:54	33:58	41.7
N1—Mitchell, W. Olney.....	32.28	71.04	108.12	142.23	.....	.....	2:22:23	32:28	35:36	39.6
N5—Mitchell, H. R. Cousins.....	33.04	68.05	113.42	150.02	.....	.....	2:30:02	33:04	37:30	37.6
N7—Buick, L. H. Titus.....	43.32	79.43	119.09	150.04	.....	.....	2:30:04	30:55	37:31	37.5
N6—Cadillac, F. W. Darnstadt.....	44.02	94.13	135.06	194.13	.....	.....	3:14:13	40:53	48:33	29.2
N8—Reo—A. F. Camacho.....	36.29	72.41	108.30	35:53	
N2—Gyroscope, C. White.....	99.53	105.05	49:53	

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MOTOR AGE

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America's Initial Motorway Opened

AN EPOCH in motor-driven land transportation is marked by the opening of the Long Island Motor Parkway, a race course only incidentally and not constructed exclusively for high speed competition, as is the generally erroneous impression. First of many motorways for the use of motor cars is the Long Island road, and therein William K. Vanderbilt, Jr., has placed to his credit something which logically should come from a family whose members for three generations have figured in the history of transportation. If man is to get the full worth of the latest form of individual transport, he must supply a road whereon he can take advantage of its time-saving possibilities. All other arteries of travel must be avoided, including the highway on which the horse will continue for a longer period to plod its weary way; the dangers of railroad crossings at grade must be obliterated, and the rights of the pedestrian cannot be overlooked, for while many will use the motor car, a still greater number may never be so fortunate. 'Tis a clear and open road that the car requires, and, given such, man will enjoy and employ his new means of progress to its fullest reasonable extent; not a few will go beyond the limits of prudence—and, frequently, pay the penalty.

A Certain Financial Success

WHEN its plans are entirely consummated, the Long Island motorway will supply an uninterrupted route across the island, which, owing to its proximity to the metropolis, is destined to be the home of millions with business and social interests in New York city. Some day the state will supply such motorways—for the ultimate form of all highway traffic is certain to be of the motor-propelled sort—but until that time arrives the owner of the motor car will not object to paying for the boon of an open road that is such in reality. The assured enormous population of Long Island is a guarantee of the ultimate financial success of its motorway, but those who have made it possible are not counting upon any substantial return from their investment in the immediate future.

Honor Where Honor Is Due

WEEN motoring will have attained some years to its being, and the events of its past will necessitate the telling so that the new generation can inform itself of that which is history, the chapter on the first of the motorways will make known to what great degree one William K. Vanderbilt, Jr., first prominent because of a racing cup bearing his name, added more permanently to his motoring fame by being the moving and responsible factor in the building of the first road in the world for the daily use of the car, which undertaking created an example that was soon followed by many such highways throughout the country, thereby aiding materially in the growth of a great industry which carried with it far-reaching effects.

A Manufacturer's Idea

CONTINUOUS trans-state roadways such as the Long Island motor parkway, and inter-state roads of this nature while benefiting immeasurably the land on either side will prove an enormous revenue producer to the makers of motor cars, who will find the demand for cars increasing with every advance in the construction of good roads. The benefits and pleasures of motoring will be so great with such roadways, in comparison with the present situation of roads, that masses up to the present uninterested in motor cars will invest, realizing as they will, the reduced tire expense and wear and tear on the car because of the good roadbed.

Etiquette of the Highway

FOR years we farmers have been used to saying 'good morning,' or 'good-day' whenever we meet, whether we know one another or not, and when these city motorists come along they want the whole road and won't say 'thanks' for it. Our little hamlets used to be quiet, homelike places until the gasoline car arrived, and now they are filled with clouds of dust and feathers when many of the big cars rush through. Often a car driver stops to ask the way at a turn and never waits to thank you for the directions you have given him.' This summing up of the road situation by an Ohio farmer contains a great deal of truth and is the experience of many farmers who use the highways a great deal. The motorist who meets a horse-driven vehicle and passes it at 20 miles per hour without scarcely looking to see how the horse is behaving is an injury to the cause of motoring.

Courtesy Is Cheap

IT IS as easy for the car driver to bow to the farmer, to speak to him or wave the hand as it is to shoot past, with eyes fixed on the road ahead. The city driver may be pardoned for this apparent breach of etiquette with the farmer, because he has been reared in the city, where it is daily practice to pass thousands on the streets without speaking to them. Not so with the farmer, he speaks to all he meets and it will make the trips of motorists through the country much more pleasant if he salutes all his brethren from the farm. On Glidden tours it is customary for all passengers in contesting cars to wave hands at those watching the cars, whether they are on the roadside or at the farm house, and the result has always been the establishing of very friendly relations along the road; in fact there is scarcely a case on record where the antipathy of the farmers has been aroused where such simple measures have been followed.

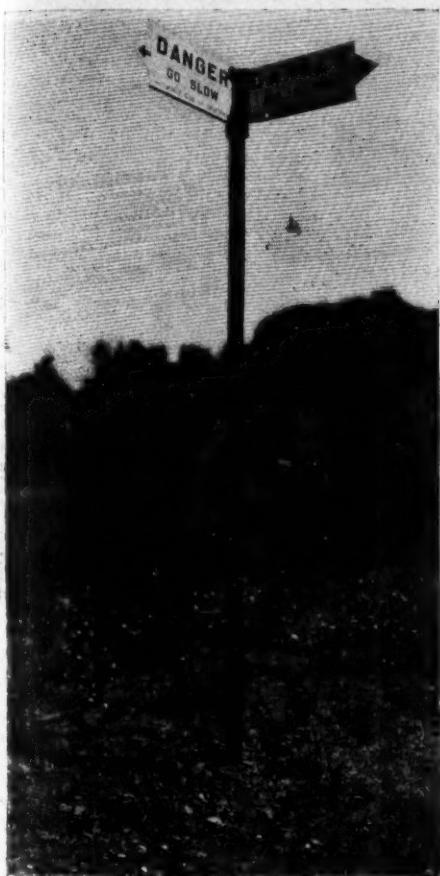
Avoid Grand Stand Play

IF THE inconsiderate motorists will follow a few rational road axioms much of the road hostility will vanish. Some drivers have the bad fault of holding the middle of the road until near to a team of horses, which the frightened driver has half way into the ditch, and then quickly swinging to the side and rushing past. After a recent performance of this nature by a driver the farmer pulled his gun in anger, although refraining from shooting. Such driving is injurious in every regard to the good of the industry. It is just as easy to pull off the center of the road before immediately in front of the horse vehicle. In a year or so more the farmer will know better the varied maneuvers of the motor car, and until that time let his period of probation be as free as possible from hair-raising experiences which are often sources of amusement to the car driver, but not so looked upon by the horseman.

The Farmer Has His Turn

BUT it is not all the fault of the motorist—far from it. **B**Not infrequently a horse driver refuses to hear the motor car in rear of him; often this same driver takes advantage of the law of holding up the hand, and causes the motorist needless delay; and then again the farmer is obstinate in giving the half of the road which he is called upon legally to give. These and many other breaches of road etiquette on his part are unpardonable, but cannot consistently be cited as reasons why the motorist should act similarly. "An eye for an eye and a tooth for a tooth" is poor policy in road driving for motorists and is a slow way to secure ideal road etiquette on the American highways.

CALIFORNIA'S INGENIOUS SIGNBOARDS



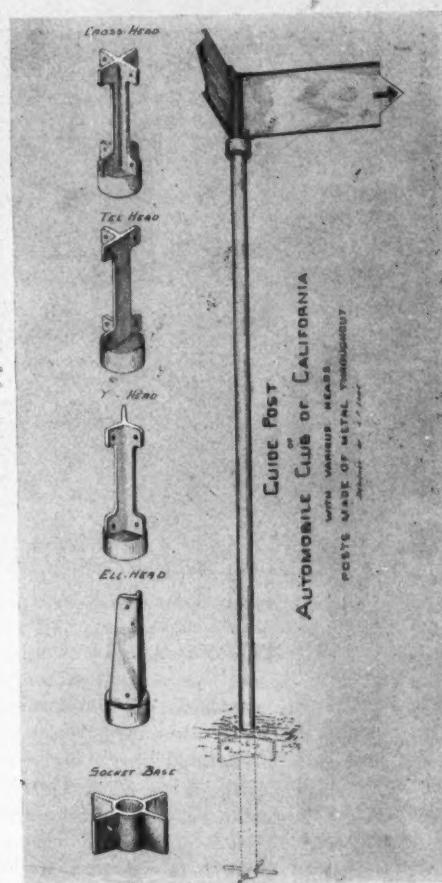
ELL TYPE OF SIGN

SAN FRANCISCO, CAL., Oct. 10—The Automobile Club of California, the headquarters of which is at San Francisco, has taken up the work of marking the main arteries of highway travel and the principal by-ways within a radius of 250 miles in all directions from San Francisco. In determining upon the nature of the best marking it was finally decided to adopt the plain, simple method of marking the directions with the names of principal towns rather than to adopt the method of marking by emblematic signs which are of use to motorists only. It was also thought that by adopting the simple method described above, it would lead to a continuance of the work in the same manner by boards of supervisors, which could scarcely be expected to follow the emblematic method of marking.

After determining upon the method of marking,

as described above, the next step was to select the most suitable type of guide posts and after a careful consideration of this point, it was decided to adopt a post of all metal construction, notwithstanding its considerably greater cost. The metal is so carefully preserved against corrosion as to insure its lasting for many years to come, the post being very thoroughly coated both inside and out by dipping in asphaltum paint. The post is made of 2-inch standard pipe which is threaded at one end to receive the cast head suitable to the locality at which the post is placed. There are four types of these heads, designated as "cross," "T," "Y," and "ell," and it is obvious that these heads will be used to mark cross roads, intersecting roads, branch roads, etc., depending upon the most suitable type of head for use at the particular location. In order to insure economy and to save waste of material, it is necessary to limit the length of the pipe portion of the post to about 10 feet, as it is difficult to secure pipe in lengths greater than about 20 feet and from a pipe of this length two posts can be cut. In planting the post it is buried in the ground for about 2 feet, thus leaving about 8 feet above ground, and as the pipe is surmounted with the fixture holding the sign, it places the latter well out of reach and at about the right height to be readily caught by the eye. These signs are of uniform size, 9 inches wide and 24 inches long.

To insure stability, the post, before being planted in the earth, is provided with cross bars of $\frac{5}{8}$ -inch round iron at the bottom, these bars being 12 inches long and passed at right angles through holes drilled through the pipe, as shown. These bars not alone provide a base support but also prevent the turning of the post either by accident or intention. Just below the



VARIOUS TYPES OF SIGNS

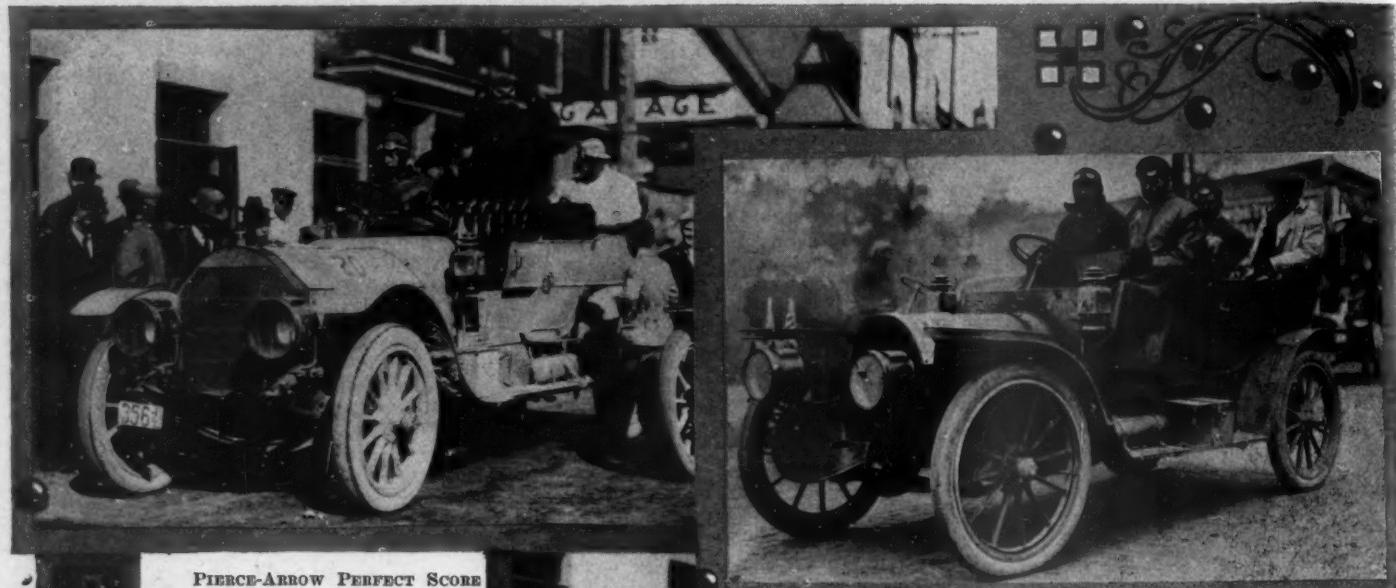
surface of the ground a cast iron winged socket is placed around the post, this socket being for the purpose of firmly holding the post in place and without which it could very easily be loosened by shaking or wind pressure on the signs. To the cast iron heads surmounting the posts are attached the direction signs, these being made of No. 16 gauge metal with $\frac{1}{2}$ -inch flanged edges turned at right angles to the main body of the sign in order to insure rigidity. The signs are cut with a point upon which is placed an arrow pointing the general direction.

The signs which are now being made are of enameled steel, the background being in white and the letters in black, the letters being of very clear simple block type. In attaching these enameled signs to the cast iron heads, it is necessary to use brass bolts in all of them.



ONE OF CALIFORNIA'S TYPICAL ROADSIDE SIGNS

CHICAGO RELIABILITY A REMARKABLE ONE



PIERCE-ARROW PERFECT SCORE

FRANKLIN PERFECT SCORE

CHICAGO, Oct. 12—Progress made in the construction of American motor cars in 1 year is illustrated by the results of the 4-day 1,000-mile reliability run of the Chicago Motor Club, which was finished last Friday and in which five of the seventeen cars that started were hall-marked perfect both for the road work and mechanical efficiency at the finish, when the technical committee made a rigid scrutiny of the survivors. Two Haynes cars, a roadster and a touring car; a Pierce-Arrow touring car, a Premier roadster and a Franklin touring car, were found to be without a loose bolt or nut, without a broken part, with all wheels true; in fact there was not the slightest chance for the technical committee to find fault. A year ago, when this same club promoted a 3-day run of 600 miles and in which thirty-five cars competed, only one was found perfect at the end. There were a dozen which had escaped penalization on the road then, but the mechanical examination disclosed broken parts or something loose that eliminated all but Nutt's Haynes roadster. The scrutiny of Messrs.



HAYNES TOURING CAR, PERFECT SCORE

CHICAGO RUN RESULTS

PERFECT SCORE TOURING CARS

Car	Driver
Franklin	C. S. Carris
Haynes	L. Wagoner
Pierce-Arrow	Paul Hofmann

PERFECT SCORE ROADSTERS

Haynes	Frank Nutt
Premier	Ray McNamara

FUEL CONSUMPTION WINNER

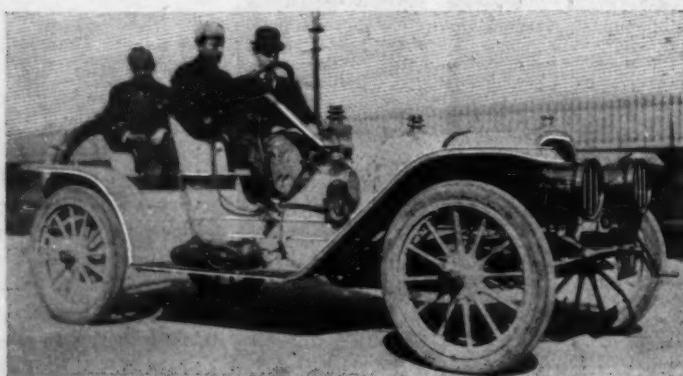
Premier	Ray McNamara
Average	15.81 miles per gallon

WINNER OF TIRE TROPHY

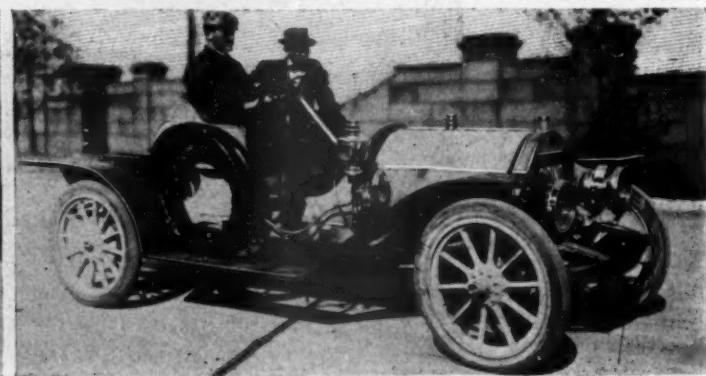
Diamond Rubber Co.

testimonial to the efficiency of the 1908-1909 crop of American-built motor cars when it is remembered that these five perfect machines had just run 1,000 miles without an adjustment, without a break of any sort and with the motors running all the time outside of controls.

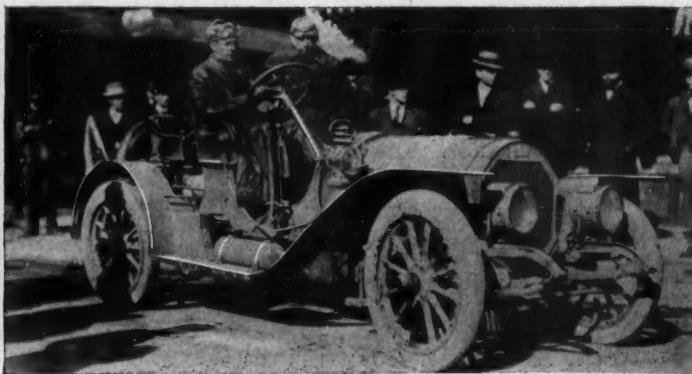
The Chicago Motor Club contest was a remarkable one in many ways, for in it were included three different angles—car reliability, tires and gasoline consumption, in each division of which there were prizes offered. The tire competition was entirely new in American competitions, this being the first time any promoting organization



FRANK NUTT'S HAYNES ROADSTER, PERFECT SCORE



PREMIER, PERFECT SCORE AND FUEL TEST WINNER



WHITE AND APPERSON WHICH SUCCESSFULLY DODGED THE PUNCTURE DEMON

has attempted to tabulate the work of the pneumatics. It was rather an awkward proposition to tackle, but the technical committee evolved a set of regulations by which the penalizations against the different makes of tires were computed on a basis of 2 points per man per minute of labor, whether inflating, changing inner tubes or casings. No distinction in penalty was made between punctures and blowouts, the only criterion being time spent. No additional penalties were imposed where demountable rims or quick detachables were used. Any make of tire eligible for the trophy had to be represented by two complete sets, but the only makes so represented were the Diamond and Goodrich, the former having six cars and the latter three. The Diamond was the winner, having a penalty of 11.4 points average against each tire or a total of 274 points against the twenty-four tires. The Goodrich had an average penalty of 25, or a total of 300 against the twelve tires. The Apperson and No. 14 White, both fitted with Diamonds, went through without a puncture or any work being done on them.

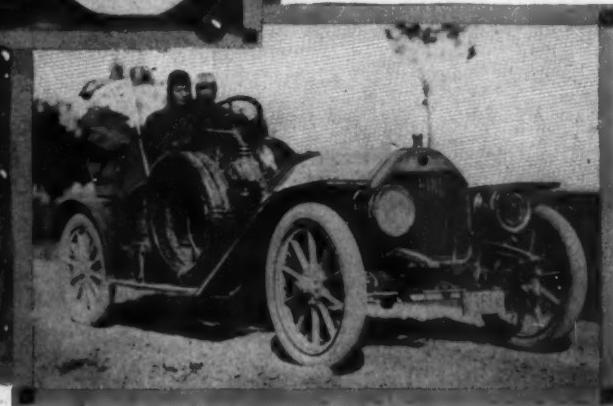
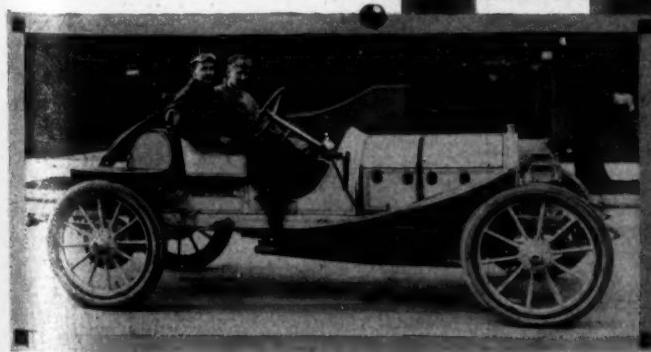
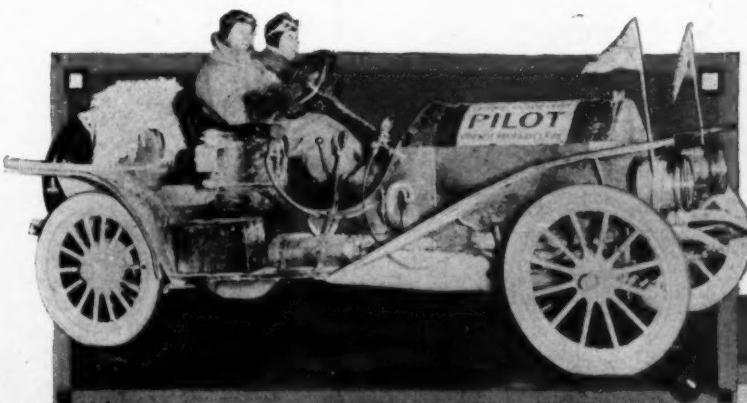
While economy tests are no new propositions, the one held in connection with the Chicago run was the longest on record and shows more than any of the others, for the conditions were the same as the average tourist encounters. There was no adjustments

of carburetors to make a good showing in this line, for the main consideration was the reliability end of the event, and so the contestants had to pay the greatest attention to that, with the result that the gasoline showing can be taken as an excellent criterion of the abilities of the various cars in the fuel consumption line. The trophy in this was put up by the Standard Oil Co. and was awarded for the smallest consumption under the Chicago Motor Club formula in which the weight of the car with load was divided by the fuel consumption in ounces. Under this formula the winner was the Premier roadster driven by Ray McNamara, which showed a pound mileage of 224.1. But the Premier also distinguished itself in the line of straight fuel consumption regardless of the formula, for it used the least gas of any, going through the 4 days on 69 $\frac{1}{4}$ gallons, or an average of 15.18 miles per gallon. At 15 cents a gallon it cost $\frac{1}{3}$ cent per mile for fuel for

each passenger for the trip of 1,000 miles over country roads.

Two main trophies were offered by the club, one for roadsters and the other for touring cars, as well as medals in the various classes, which were made according to price. The results brought about two ties in the roadster division in which the Haynes and the Premier were perfect, while there were three touring cars, the Franklin, Haynes and Pierce-Arrow, without a mark against them. There will be no run-off, however, the club officials declaring that the cars have done all that was asked of them and that they can see no reason to ask the entrants to continue in what really means a test in which the main idea is to wreck the survivors, whereas the object of the original test was to demonstrate the efficiency of the modern motor car. The classes did not fill as well as expected and in consequence there were several walkovers. Class E, for touring cars costing from \$2,000 to

\$2,499, resulted in the keenest competition but which brought about no winner, the Franklin and Haynes having perfect scores. In classes B, C and H, the Mason, Apperson and Pierce-Arrow had no opposition, while in class D the Haynes and Premier tied with perfect scores, just as in the main event in which the two were in at the death.



DIAMOND T CONFETTI CAR—STODDARD-DAYTON PILOT—PREMIER TECHNICAL BOARD'S CAR

RESULTS IN THE FULL ECONOMY TEST, WON BY PREMIER

No. and car	Pass. load gal.	1st day, gal.	2d day, gal.	3d day, gal.	4th day, gal.	Wt. load.	Total Con.	Pound mileage
Withdrawn								
1—Reliable Dayton	16	18	21	19 $\frac{1}{2}$	2,950	74 $\frac{1}{2}$	171.3	
2—Maxwell, 4	24	20	24 $\frac{1}{2}$	18 $\frac{1}{2}$	2,615	87 $\frac{1}{2}$	119	
3—Mason, 4	19	15	20	15 $\frac{1}{2}$	2,735	69 $\frac{1}{2}$	170	
4—Mason, 4	26	22	24	24 $\frac{1}{2}$	3,420	96 $\frac{1}{2}$	153	
5—Apperson, 3								
6—Midland								
7—Pierce, 3	29	27	28	26	4,280	110	169.5	
8—Haynes, 3	31	22 $\frac{1}{2}$	21	20 $\frac{1}{2}$	3,675	84 $\frac{1}{2}$	198	
9—Premier, 3	19	13	20	17 $\frac{1}{2}$	3,585	69 $\frac{1}{2}$	224.1	
11—Rainier	30							
12—White, 4	43	35	40 $\frac{1}{2}$	34 $\frac{1}{2}$	4,765	153	134.5	
14—White, 4	39	33	38	35 $\frac{1}{2}$	4,630	145 $\frac{1}{2}$	137.9	
15—Franklin, 4	18	15	22	15 $\frac{7}{16}$	3,255	70 7-16	200	
16—Haynes, 4	28	22	23	20 $\frac{1}{2}$	4,000	93 $\frac{1}{2}$	184.5	
17—Studebaker								
19—Marmon, 4	34	31	27	27	5,060	119	183.5	
20—Pierce, 6	32	30	35	31 $\frac{1}{2}$	5,575	128 $\frac{1}{2}$	187.5	

This competition was for the trophy presented by the Standard Oil Co. to the car that completed the 1,000 miles with the smallest consumption as per the Chicago Motor Club formula, the weight of the car with load in pounds divided by the fuel consumption in ounces. No report is made of cars which were withdrawn.

The report of the technical committee on the winners in all three competitions is an interesting one, and is as follows:

PERFECT SCORES—ROADSTER CLASS

No. and car	H.P.	Driver
8—Haynes	36	Frank Nutt
9—Premier	32	R. McNamara

PERFECT SCORES—TOURING CARS

No. and car	H.P.	Driver
15—Franklin	28	C. S. Carris
16—Haynes	36	L. Wagoner
20—Pierce-Arrow six	60	P. Hofman

GENERAL STANDING—ROADSTERS

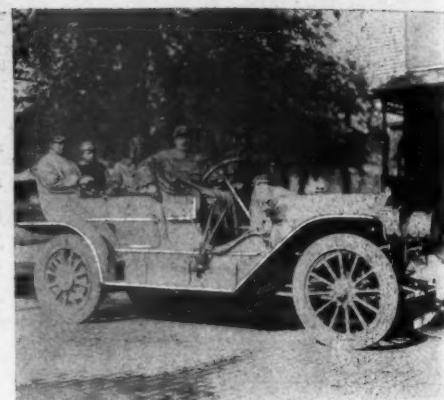
No. and Car	H. P.	Points
8—Haynes	36	Perfect
9—Premier	32	Perfect
7—Pierce-Arrow	43	1 point
5—Apperson	30	32 points
3—Mason	20	216 points
11—Rainier	45	Withdrawn
6—Midland	32	Withdrawn
1—Reliable Dayton	21	

GENERAL STANDING—TOURING CARS

No. and car	H. P.	Points
15—Franklin	28	Perfect
16—Haynes	36	Perfect
20—Pierce-Arrow	60	Perfect
19—Marmon	50	2 points
4—Mason	20	2 points
12—White	30	21 points
2—Maxwell	20	51 points
14—White	30	55 points
17—Studebaker	27	Withdrawn

CLASS STANDING—CLASS B CARS SELLING FOR \$1,000 TO \$1,900

No. and car and driver	Score
44—Mason, F. Harn	2 points
CLASS C—CARS SELLING FROM \$2,000 TO \$2,499	
5—Apperson, N. McLain	32 points

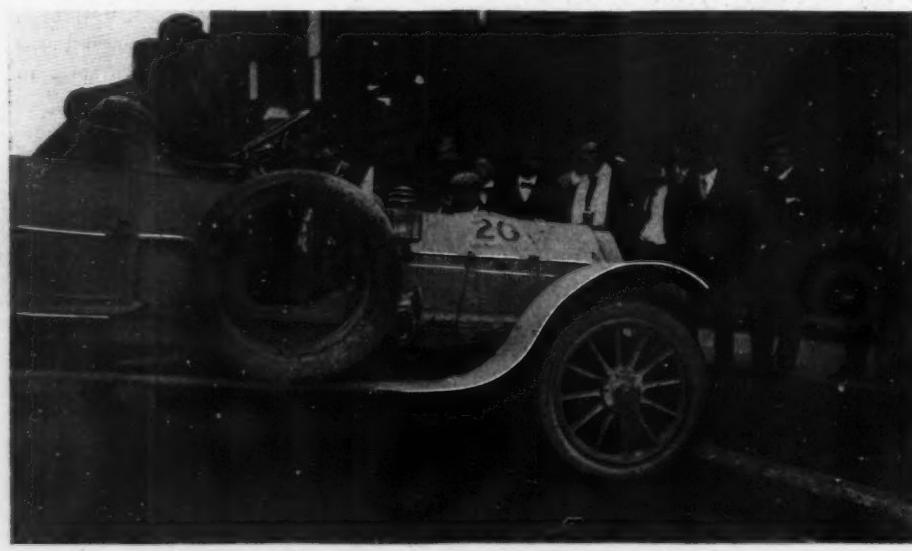


MARMON WHICH PERFORMED WELL

lost a point for its fan belt being off, while another point was added for a leak in the air line that creates the pressure on the gasoline feed. The No. 12 White was found to have its oiler chain off the sprocket, which cost it 20 points, while another point was given for the fan being out of commission. The No. 4 Mason was penalized 2 points for the two threaded locking bushings on the front end of the rear strut rods being loose.

Only four cars were penalized during the actual run and four others met with mishaps that caused their withdrawal. The Maxwell was penalized for magneto-trouble, while the No. 3 Mason was demerited each of the 4 days. The Apperson drew 22 points on the third day when it was necessary to break a seal to repair an oiler belt. The No. 14 White was penalized the fourth day when its oiler chain slipped off. Of the four cars that were withdrawn the Reliable Dayton went out the first day with a broken frame. Six holes had been bored in it to permit of lamps being attached. This weakened it so that when the car hit a culvert near Kenosha the frame broke. The car ran the last day as a non-contestant. The Midland smashed a wheel the second day turning off the road because of new gravel, but went in again as a non-contestant. On the fourth day it again met with hard luck, breaking a frame. "Beating it" was responsible for the Rainier breaking its frame, the car being withdrawn the second day, but going through the full 1,000 miles, being first home each of the 4 days. The last 2 days the car was driven by A. M. Robbins, manager of the Chicago branch, and it experienced no trouble. The Studebaker also was one of those to be withdrawn. Its first mishap occurred the first day when a pinion gear in the differential was stripped through a broken ball. On the third day the car skidded on the wet cobblestones in South Chicago and broke a wheel. It went through the entire 1,000 miles, however.

The first day's run was over a course taking in Kenosha, Janesville and Rochelle, the distance being 262.7 miles. The second day the cars went via Aurora, Ottawa and LaSalle, 241.8 miles; the



PIERCE-ARROW TOURING CAR IN THE CLUTCH TEST



No. 4 MASON, ALMOST PERFECT

third day to Crown Point, Valparaiso, La Porte, Plymouth, South Bend, Michigan City, Hobart and Hammond, 257 miles, and the last day to Rockford, Oregon and Rochelle, 230 miles.

The careful examination by the technical committee of the thirteen cars which completed the run was sufficient to show the high standard which American motor car makers are approaching and which many of them have reached. In the five perfect score machines not a point could be discovered which would bring penalization upon the clean road record and the outdoor test. Every nut was locknotted or cotterpinned, and every part of the car was firm and in as good shape as at the start of the run. In only one case, in the examination of the thirteen cars, were loose parts discovered, these being the two forward bushings on the radius rods of No. 4 Mason car, which bushings thread into the brackets on the under side of the frame and retain the ball endings of the radius rods. In this case it was a matter of carelessness in assembling rather than a matter of construction, the driving chain having been adjusted after the car was put in the train for shipment to Chicago. The cotter-pinning and lock-nutting of every nut on the chassis insures freedom from trouble and a prevention of racking the car.

The greatest trouble, as evidenced by the final examination, was driving oilers and fans, no fewer than five cars being penalized for fan belts off, and three for chain or belt-driven oilers, the driving belt or chain of which had come off during the run. The breaking of springs was a thing of the past, as far as the run was concerned, there not being in the entire total of 16,000 miles, covered by all of the cars, a case of a broken spring or spring leaf. This again suggests the value of cotter-pinning the nuts on spring clips, the result being that the clips are always tight and breakage is prevented.

Compared with the 600-mile run of 1907, the cars in the present trial showed up particularly well in the method of attaching mufflers. In the previous run many mufflers shifted apart and others loosened in their supports. On this occasion, after the 1000 miles of strenuous

REPORT OF COMMITTEE ON THE TIRE COMPETITION

DIAMOND CONTESTANTS		
No. and Car	Tires	Penalty
5 Apperson	4	0
8 Haynes	4	86
9 Prender	4	52
14 White	4	0
16 Haynes	4	68
19 Marmon	4	68
Total	24	274

Total penalty, 274 points, divided by 24 equals 11.4.

GOODRICH CONTESTANTS		
No. and Car	Tires	Penalty
7 Pierce-Arrow	4	32
15 Franklin	4	244
20 Pierce-Arrow	4	24
Total	12	300

Total penalty, 300 points, divided by 12 equals 25 points.

OTHER TIRES IN TEST		
No. and Car	Make	Penalty
3 Mason	Hartford	4 76
2 Maxwell	Ajax	4 210
4 Mason	Michelin	4 246
12 White	Fisk	4 20

Four other contesting cars which failed to complete the 1,000 miles of the contest, or did not check into the night garage, had no recognition taken of the tires used. Particular attention is due the Diamond tires fitted on cars No. 5 and No. 14, all of which went the 1,000 miles without work of any nature done on them.

The penalizations were computed on a basis of 2 points per man per minute of labor, whether inflating, changing inner tube or casings. No difference in penalty was made between punctures and blowouts, the only criterion being time spent. No additional penalties were imposed where demountable rims or quick detachables were used. Any make of tire eligible for the tire trophy had to be represented by two complete sets.

road work, the mufflers were firm and did not show one symptom of breaking apart. Lost grease cups, which in many runs during the year have brought penalizations upon cars that otherwise had clean scores, were unknown. The securing of these cups to the different car housings is quite a small matter and the secure attaching of them relieves the car driver of much strain and worry.

It would appear that the old trouble of spark plugs is rapidly becoming a thing of the past, there being but one case on record of the thirteen cars which completed the run having to replace a spark plug. This may be due to two causes: First, the better construction of plugs, and second, the more perfect lubrication of the motor. It is a fact that over or under lubrication work havoc with spark plugs and it is undoubtedly a fact that improvement in this respect is largely re-

sponsible for the almost total freedom from troubles of this nature.

Radiators, which in the Glidden tour proved the bugbear of a dozen cars, had a comparatively easy time on the run because of the freedom from water breaks on the Illinois, Indiana and Wisconsin roads. This freedom from leakage was also largely due to the moderate pace set by the majority of the cars.

One criticism that might be offered in connection with the majority of cars is the leaking of grease and oil from different bearings. In some cases this was so great as to spatter the wheels; in other cases the under part of the chassis was everywhere smeared with oil; and in others, the mud apron carried a coating of congealed oil and grease an inch and a half deep. All of this indicated an enormous waste in lubrication, which doubtless can be largely overcome by a better



SCENE ON EIGHTEENTH STREET DURING BRAKE TEST

construction of return oil ducts from the system of packing at the bearings and the end bearings of the crankshaft, camshaft, and gearshafts to the motor crankcase. Similar ducts can be used in conjunction to the shafts of the gearbox. Leaking from the ends of the rear axles was common in several cases, and can be overcome to a large extent. This waste of oil can largely be overlooked due to the anxiety of the drivers to get through with as clean as score as possible.

FAST WORK BY FIAT

Providence, R. I., Oct. 10—The feature of the race meet of the Rhode Island Automobile Club on the old Narragansett park track was the work of Ralph de Palma in a Fiat, who made the fastest time of the day, breaking the old track

a Cameron driven by Wilcox, and two Fords driven by Edgecomb and Myers. Light had an easy victory and did not force his car. Cameron ran into the fence, which put that car out, and also in avoiding the Cameron, Myers was put out, so Edgecomb in the other Ford got second.

The special race for gasoline cars of any power was divided into heats. There were four in the first heat, an American Locomotive, Pope-Hartford, Welch and Pittsburg. It was a pretty race between the American Locomotive and the Pope-Hartford as the latter clung to the former all the way and tried several times to pass but could not. In the second heat there were a Corbin, Welch and Stearns. The Corbin was ditched and the Welch won.

The final heat was a repetition of the first one with Grant in the American Lo-

Capron to make wide detours and prevented the latter from taking the lead when there was a chance.

The free-for-all did not prove as interesting as it had been expected for Baldwin was not on hand and de Palma had come here expressly to meet him. De Palma captured the race from Grant in an American Locomotive car with Cragford in another Fiat third. De Palma's time, 4m 36s, is claimed to be a record for five miles in competition on a track. The summary:

Five miles, stock steam cars—Stanley, driven by F. Marriott, won; Stanley, driven by W. R. Files, second; Stanley, driven by A. C. Trimble, third; time, 5:28 3-5.

Five miles, gasoline stock cars—Chalmers-Detroit, driven by Oliver Light, won; Ford, driven by C. A. Edgecomb, second; Ford, driven by James Meyers, third; time, 6:45 3-5.

Five miles, gasoline stock cars—American Locomotive car, driven by Grant, won; Welch, driven by L. S. Rogers, second; Stearns, driven by C. Stafford, third; time, 5:14 4-5.

Exhibition 1-mile race against time—Flat Cyclone, driven by Ralph de Palma; time, :52 3-5. Old record 54 seconds.

Special race, gasoline stock cars—First heat, American Locomotive car, driven by Grant, won; Pope-Hartford, driven by H. A. Capron, Jr., second; time, 5:14 4-5. Second heat—Welch, driven by Rogers, won; Stearns, driven by Stafford, second; time, 5:17 2-5. Final heat—American Locomotive car, driven by Grant, won; Pope-Hartford, driven by H. A. Capron, Jr., second; Welch, driven by Stafford, third; time, 5:13 3-5.

Five miles, free-for-all—Flat Cyclone, driven by Ralph de Palma, won; American Locomotive car, driven by Grant, second; Flat, driven by Cragford, third; time, 4:26.

Five miles, motor cycles, 20-inch displacement—Indian, ridden by B. A. Swenson, won; Indian, ridden by E. L. Buffington, second; time, 6:35 2-5.

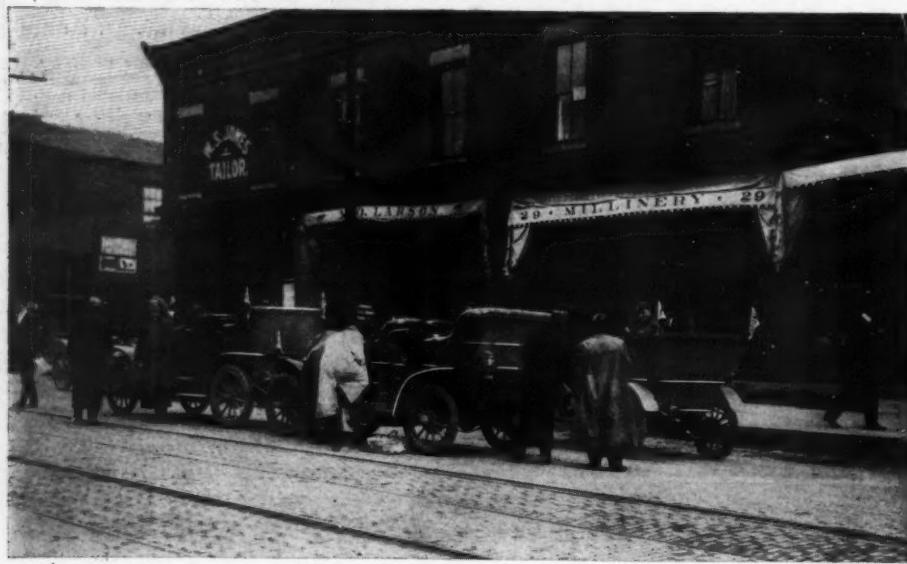
Five miles, motor cycles, 30-inch displacement—Indian, ridden by B. A. Swenson, won; Merkle, ridden by J. McLaughlin, second; time, 5:37 2-5.

Five miles, motor cycles, 60 cubic inches displacement—Indian, ridden by B. A. Swenson, won; Indian, ridden by E. L. Buffington, second; time, 5:28 1-5.

Special motor cycle mile race against time—B. A. Swenson; time, 1:02 3-5.

RECORD TIME AT FRESNO

San Francisco, Cal., Oct. 4—The Fresno county fair was opened Monday with a number of motor car and motor cycle races that furnished some good sport. Three of the five motor car events were won by a Sunset car, driven by Frank Free, who has recently won some renown through his numerous victories with the



SCENE AT THE CHECKING STATION AT AURORA

record for the mile here, which was :54, lowering it to :52%, a remarkable burst of speed considering the conditions. He also lowered his old 5-mile track record to 4:26, which is claimed as a world's record by the Fiat people. Next to de Palma in point of interest was Harry Grant, driving an American Locomotive car, who captured two events and got second in another. Fred Marriott, holder of the world's international mile record, won the race for steamers. Baldwin, who was expected to race, did not appear. All the events were at 5 miles and there was a big crowd present, many coming from Boston.

The first race for gasoline cars of from 40 to 60 horsepower. Only four of the nine cars entered appeared. They were an American Locomotive driven by Grant, Welch and Rogers up, Stearns with Stafford and Pittsburg with Webster. Grant took the lead at the start and he was never headed. The Welch was second with the Stearns third and Pittsburg last.

Four cars were entered for the 15 to 24-horsepower gasoline stock race. They were a Chalmers-Detroit with Oliver Light,

comotive and Capron in the Pope-Hartford fighting it out all the way. At times they came down the stretch side by side but Grant finally captured the event. After the race a protest was lodged against Grant, alleging that he forced

SCORE OF CONTESTING CARS IN 1000-MILE RELIABILITY

No.	Car	Div.	Class	H. P.	Bore	Stroke	No. of Cyl.	Tires	Entrant
1	Reliable-Dayton...	1	A	21	5 1/2	4 1/2	2	Goodyear..	Reliable Dayton Motor Car Co...
2	Maxwell.....	1	B	20	5	5	2	Ajax	Maxwell-Briscoe-Chicago Co...
3	Mason.....	1	B	20	5	5	2	Hartford...	Mason Motor Car Co
4	Mason	2	E	20	5	5	2	Michelin..	Mason Motor Car Co
5	Apperson	1	C	30	4 1/2	5	4	Diamond..	J. F. Gunther Co...
6	Midland.....	1	C	32	4 1/2	5 1/2	4	Diamond..	Midland Motor Co...
7	Pierce-Arrow	1	D	43	4 1/2	4 1/2	6	Goodrich..	H. Paulman & Co...
8	Haynes	1	D	36	4 1/2	5	4	Diamond..	Haynes Auto Co...
9	Premier	1	D	32	4 1/2	4 1/2	4	Diamond..	Premier Motor Co. of Illinois...
11	Rainier	1	D	45	5	5 1/2	4	Fisk..	Rainier Motor Car Co...
12	White	1	G	30	3x6	4 1/2	2	Fisk..	White Co...
14	White	1	G	30	3x6	4 1/2	2	Diamond..	White Co...
15	Franklin	2	G	28	4 1/2	4	4	Goodrich..	H. H. Franklin Mfg. Co...
16	Haynes	2	G	36	4 1/2	5	4	Diamond..	Haynes Auto Co...
17	Studebaker	2	G	27	4 1/2	5 1/2	4	Diamond..	Studebaker Bros. Mfg. Co...
19	Marmon	2	G	50	5 1/2	5	4	Diamond..	Nordyke-Marmon Co...
20	Pierce-Arrow	2	H	60	5	5 1/2	6	Goodrich..	H. Paulman & Co...

Division 1—Runabouts, four-passenger speed cars and baby tonneaus

Class A—Selling for less than \$1,000; Class B—Selling for \$1,000 to \$1,999. Class C—Selling for \$2,000 to \$2,499
Class D—Selling for \$2,500 to any limit

little California Comet. The 25-mile free-for-all race was won by Bert Dingley in a Chalmers-Detroit Blue Bird Forty, which has been on the coast for some weeks. Free in the Sunset was well on his way to victory in this race when his throttle stuck. Unable to take the turns without shutting off, he was compelled to put on his brakes. The repeated fast turning had thrown all the oil out of the right rear wheel bearings, and when the brakes were slammed on hard this wheel locked. The immediate effect was to whirl the Sunset around in the most alarming manner, the car describing two complete circles, but remaining on all four wheels. The dust was so thick that there was imminent danger of the cars following striking the Sunset. Free, regardless of victory or defeat, ran back out of the cloud to warn the other drivers to hold close to the inner fence. When he got his own car straightened out again he was too far behind the leader to catch up. In the sixth lap the Sunset made the mile in 1:01, which was the best time of the day given out by the judges. One minute flat was claimed for the Chalmers-Detroit, but this does not seem to have been official. The Chalmers' time in the 25-mile free-for-all was 26 minutes 40 seconds, which is claimed as a world's record for a stock car on a circular track. One of the features of the afternoon's racing was an exhibition 3-mile race by Mrs. William Unger. There had been some criticism of permitting women to handle cars in a race, and Mrs. Unger was the only woman who came to the line. She drove a White steamer, and she had another woman acting as mechanic, perched low on the chassis of the car. Mrs. Unger reeled off the 3 miles in 4:20, the final lap being negotiated in 1:20. The summary follows:

First race, 5 miles, for cars costing \$1,500 or less—Sunset, driven by Frank Free, won; Buick, driven by Frank Murray, second; time, 5:49 4-5.

Second race, 5 miles, for motor cycles—Abe Robb, Indian, won Cogburn, Indian, second; Wood, Indian, third; time, 5:52.

Third race—Sunset, driven by Frank Free, won; Chalmers-Detroit, driven by Bert Ding-

ley, second; Buick, driven by Frank Murray, third; time, 10:24.

Fourth race, 15 miles, for privately owned cars—Pierce-Arrow, driven by Tuthill, won; Pope-Hartford, driven by Gilbert, second; time, 19:57.

Fifth race, 15 miles, for motor cycles—Abe Robb, Indian, won; Cogburn, Indian, second; Wood, Indian, third; time, 17:05 2-5.

Sixth race, 25 miles, free-for-all—Chalmers-Detroit 40, driven by Bert Dingley, won; Buick, driven by Frank Murray, second; time, 26:40.

Seventh race, women's race, 3 miles—Mrs. William Unger, White, won; time, 5:20.

Eighth race, 3-mile potato race—Sunset, driven by Frank Free, won; White steamer, driven by Doun Whaley, second; time not taken.

Special event to break world's 3-mile motor cycle record—Ben Bresse lost, riding two-cylinder Indian; time, 2:59 1/2.

HARTFORD CELEBRATES

Hartford, Conn., Oct. 11—There has just come to a successful conclusion a 3-day celebration of the formal dedication of the new stone bridge across the Connecticut river. In connection with the celebration

sented. As celebrations go, it was typically New England. The motor car parade in the evening was a gorgeous affair. One display that was particularly deserving of mention was a light electric truck used by a local Swedish society by means of which was shown a model of a viking ship and so gracefully did the mimic craft spin over the ground that the mode of propulsion remained a mystery to the uninitiated. Of the commercial vehicle section proper, the Hartford Rubber Works Co. had a very unique float, a big electric 5-ton truck decorated in keeping with the event, and the sides bore mammoth trade marks in electric lights. The Pope Mfg. Co. was present with the big Waverly electric truck, on which was carried a 1909 model. The Electric Vehicle Co. used the 2½-ton Riker electric truck,



CONTESTING CARS CHECKING AT STUDEBAKER GARAGE, SOUTH BEND

there was an industrial procession. The Hartford Rubber Works Co., the Electric Vehicle Co., the Pope Mfg. Co., the Whitney Mfg. Co.; in fact all concerns identified in one way or another through their product with the industry were repre-

above which was an illuminated electric sign, and two old-time models were carried. The touring and runabout section was notable for many reasons. The seasons of the year were portrayed by various cars and decorated accordingly. President W. F. Fuller of the Automobile Club of Hartford was marshal of the procession in the Pierce-Arrow six.

SMALL FIELD AT CLEVELAND

Cleveland, O., Oct. 13—Between twelve and fifteen cars are expected to face the starter tomorrow morning in the October reliability contest of the Cleveland Automatic Club. The dealers are showing much more interest in this event than was the case last year, and they are making preparations to have a successful event, even though the entry list is rather small. So far two Stoddard-Daytons, two Chalmers-Detroits, two Jacksons, a Thomas light six, a Mora, Stearns, Franklin, and Oldsmobile have definitely entered in the professional class, while three more machines are assured in the amateur event. The trip will consume about 530 miles and will be of a strenuous nature.

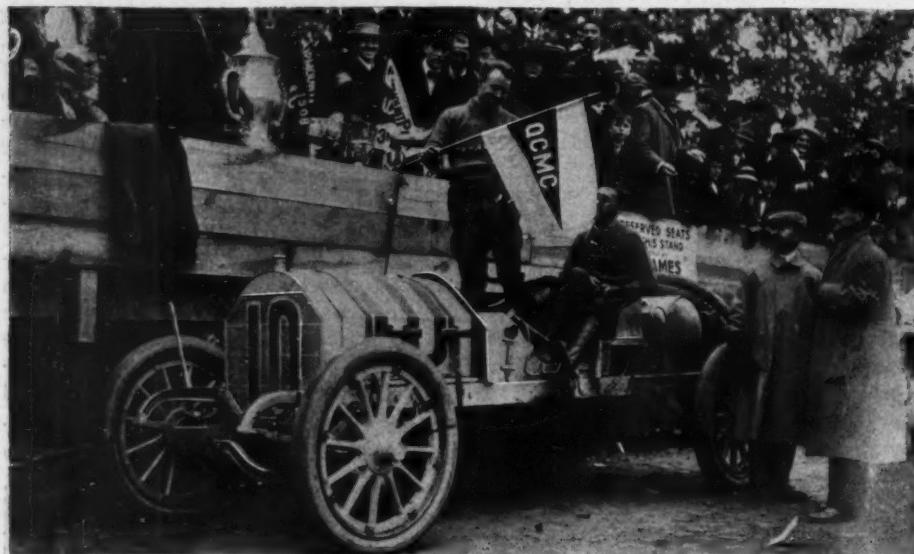
RUN OF THE CHICAGO MOTOR CLUB, OCTOBER 6-9

Drivers	1st Day	2nd Day	3d Day	4th day	Mechanical Examination	Total
C. L. Halladay.....	Out 24	* Perfect	Broken Perfect	frame, Perfect	ran last day as non-contestant.....	.....
J. Muntwyler.....					Lost fan belt, 1 point; carb. intake shield loose, 1 point; brakes, 25 points	51
F. S. Duesenberg.....	66	2	68	62	Broken strut rods, 25; inoperative comp relief, 1.	224
F. M. Harn.....	Perfect	Perfect	Perfect	Perfect	Threaded locking bushings, front end rear strut rods loose, 2 points.	2
N. McLain.....	Perfect	Perfect	22	Perfect	Brakes, 10 points.....	32
Hayes and Hall.....	Perfect	Out	Continue	as non-contestant.	.....	.....
Kumpf and Keller.....	Perfect	Perfect	Perfect	Perfect	Fan belt off, 1 point.....	1
Frank Nutt.....	Perfect	Perfect	Perfect	Perfect	Perfect.....	Perfect
R. McNamara.....	Perfect	Perfect	Perfect	Perfect	Perfect.....	Perfect
M. Hagelstine.....	Perfect	Out	Continue	as non-contestant.	.....	.....
Leitch and Condon.....	Perfect	Perfect	Perfect	Perfect	Oiler chain off, 20 pts., fan belt off, 1 pt....	21
Sheridan and Phillips.....	Perfect	Perfect	Perfect	Perfect	Oiler chain off, 1 pt., inoperative fan, 21 pts	55
C. S. Carris.....	Perfect	Perfect	Perfect	Perfect	Perfect.....	Perfect
L. Waggoner.....	Perfect	Perfect	Perfect	Perfect	Perfect.....	Perfect
G. Smithson.....	Out	Continue	d as non-contesta	.....	Fan belt off, 1 pt., air line leak, 1 pt.....	2
Shafer and Stillman	Perfect	Perfect	Perfect	Perfect	Perfect.....	Perfect
P. Hofmann.....	Perfect	Perfect	Perfect	Perfect	.....	.....

Division 2—Touring Cars

Class E—Cars costing up to \$1,999. Class F—Cars costing \$2,000 to \$2,499. Class G—Cars costing \$2,500 to \$3,999
Class H—Cars costing \$4,000 and up

FAIRMOUNT PARK RACE WON BY LOCOMOBILE



ROBERTSON IN LOCOMOBILE RECEIVING HIS PRIZES AT THE FINISH
Photograph by N. Lazarnick

PHILADELPHIA, PA., Oct. 2—In the presence of more than 400,000 people George Robertson on Saturday morning last drove his four-cylinder 40-horsepower Locomobile to a creditable victory in the 200-mile founders' week stock chassis road race over the 7.8-mile course laid out in Fairmount park. Robertson covered the course twenty-five times—195 miles—in 4 hours 2 minutes and 30 seconds—which figures out at a trifle better than 48 miles an hour for the race. Cyrus Patchke in a 45-50 Acme captured second honors in 4:14:54; Ralph Mulford, 50-horsepower Lozier, third, in 4:17:26, and Bert Mancher, 38-horsepower Peerless, fourth, in 4:21:26. Jim Florida in another four-cylinder 40-horsepower Locomobile was about 4 minutes behind the Peerless, but could not finish owing to the immense crowd which surged all over the course as soon as the winner was announced. Frank Yerger, in the 38.5-horsepower Studebaker, was also still on the course at the time, having completed his nineteenth lap.

It was a great victory for the Locomobile, its Robertson-Ethridge crew and Firestone tires. Certainly a greater crowd never witnessed the finish of a similar contest in this country. The scene which followed the presentation of the trophies to the winners will long live in their memories. By thousands and tens of thousands the crowds rushed to the finish and endeavored to get within earshot of Mayor Reyburn as he congratulated the winners and handed them their plunder. Robertson was so rattled when a couple of the mayor's assistants handed down the massive \$2,000 founders' week cup that he all but fell out of the car with the ponderous trophy on top of him. The mayor's wife thrust a bunch of American Beauties into his dirty paws at the same time, and then he had to stand there while his honor presented the Evening Times fob

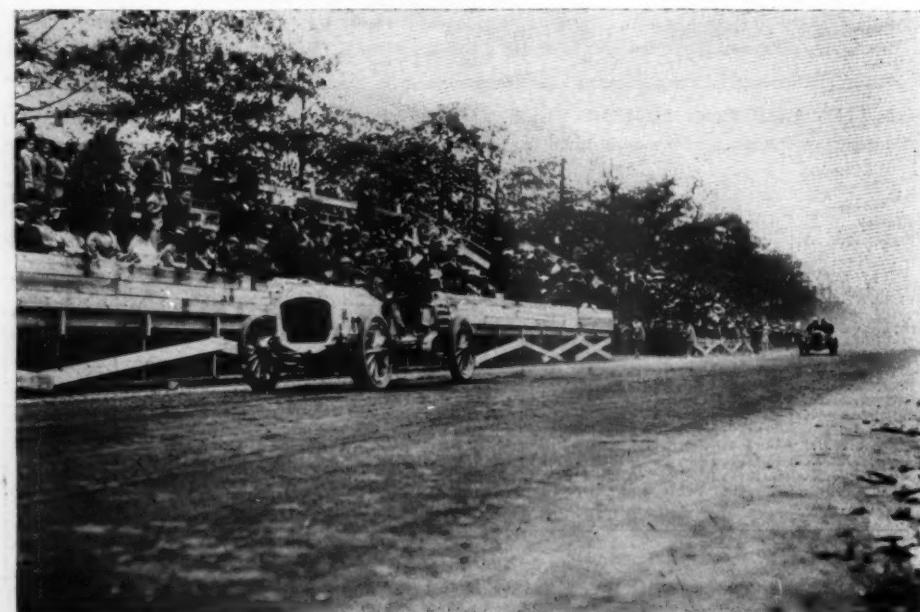
medal, which went to the driver of the winning car. All this while the immense crowd was giving itself up to an ecstasy of hero-worship which would have made a presidential nomination candidate green with envy, so loud and so prolonged was it. "Robby's" blush vied in brightness with the roses he held, especially when the mayor said: "Your children and grandchildren will honor you for this day's victory." Certainly it was a great day for "Robby."

While the victory is the Locomobile's, it would not have been possible without Robertson. Over such a course, with no long straights, heavy driving counts more than on a long circuit, with 5 and 10-mile straightaways. On a long course the car's speed has a more direct relation to the result; on the Fairmount park circuit intelligent driving is more than half the

battle. There may have been speedier cars in the race than the Locomobile, but there were no headier drivers than Robertson. He nursed his tires on the turns; he took no chances on "grandstand" work. Those who, perhaps, were disappointed at his victory, said "Luck!" He made but one stop, it is true; but that was because he treated his car and his tires as tenderly as the conditions of a bruising race would permit. When, at the conclusion of the fifteenth lap, he considered it advisable to replenish his fuel he passed the word to be ready with a complete set of tires when he came around on the next lap. All hands were ready, and the car had hardly come to a standstill before the Loco helpers were all over it like a colony of ants. In less than 3 minutes he was off. Organization helps.

Patchke, in the Acme 40, was compelled to make four stops—three for tire trouble—all on the road, away from the control, and one for fuel. These it was that helped keep him back. His car was fully as fast as the Loco, but his tire troubles, occurring, as they did, at points far removed from the Acme control, put all the work on him and his mechanician, Jere Price. Not a few valuable minutes were lost to the Acme-Patchke combination in consequence.

When interviewed after the race, Robertson was quite modest over his victory and was as ready to ascribe his success to good luck as were some of the disappointed ones. "We hadn't the semblance of an accident," he said, "and my car ran just like a well-taken-care-of watch. We stopped but once, and did everything needed to the car then, including the putting on of a full set of Firestones. The tires we started with were not bad, but we had a little in the bank, and played things



Photograph by N. Lazarnick

ACME WHICH FINISHED SECOND IN RUN

safe. The course was not a fast one, and I early realized that any one who attempted to 'beat it' would come to grief. I figured it out that the Loco outfit could stand a 50-mile gait and win. I adhered to that schedule as nearly as I could."

Ralph Mulford, driver of the Lozier six, while somewhat disappointed over the result, said he might have won had the race been twice as long. "We were on the same lap with the leaders right up to the twentieth round, when we lost 6 minutes with a bad tire. We showed what we could do on the tenth lap, when we made the fastest circuit of the day." And he showed the North American trophy which he had captured as the result of that fast bit of work.

Salzman won the Record cup for making the fastest time on the first lap in the Thomas—8:57. The Press trophy for the best average time, and the Evening Telegraph cup for the most uniform time for the twenty-five laps have not yet been awarded.

It was a bleak morning, with a strong northeast wind chilling the marrow of the thousands of sport-loving Quakers who had left their warm couches to witness the novelty of a big road race right at their doors, as it were. All the trolley cars were put at work an hour earlier than usual to accommodate the huge crowds which flocked to the park. Many motorizing parties went out to the course shortly after midnight in order to secure favorable positions to witness the race; not a few of them had provided themselves with the materials for making coffee, and as dawn broke the scene suggested an immense army just waking to the day's activities—lacking the canvas and the instruments of warfare, of course. At the big camp on Belmont avenue the handlers of the various cars and the tire men were up betimes, several of the racers taking



DAVIS IN APPERSON WAS AN EARLY CONTENDER
Photograph by Pictorial News Co.

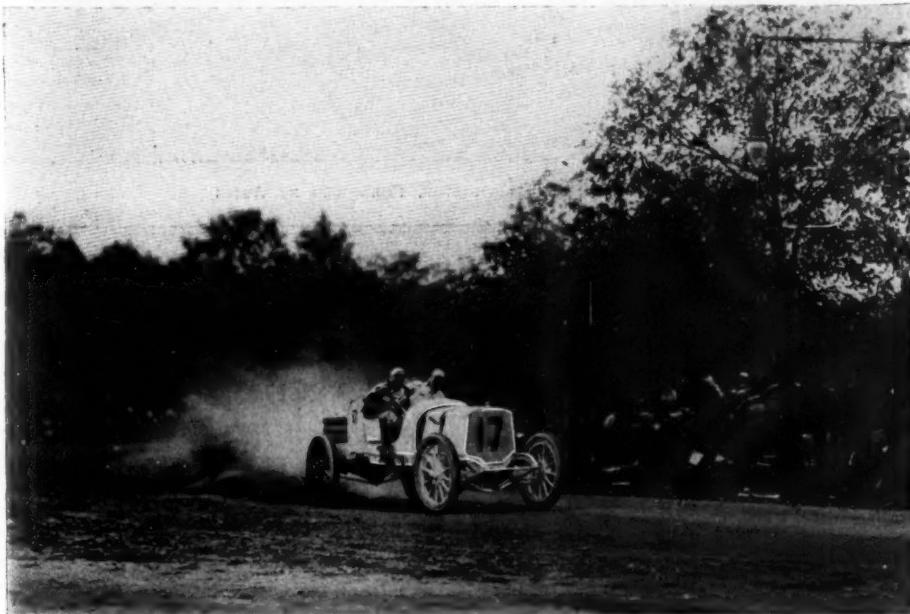
slow trips over the course to finally size it up before the actual race should be on.

The spectators were gratified at the early announcement that the Thomas would start. The A. A. A. officials had limited the number of entries to sixteen, and there were several disappointed candidates when that limit was reached. Erwin R. Bergdall, however, withdrew his Welch, and as the Thomas was first substitute, it was given the coveted place. It looked like a winner for six laps and then went to the discard with a broken crankshaft.

The management of the whole affair from the beginning was excellent. The mayor was in his place in the official grandstand for 5 long hours, and under his eye Superintendent of Police Taylor had his men on their mettle. Only one criticism was heard, and that was as to the rather primitive score-board provided. This was built over the press stand, and apparently for the sole benefit of the grandstand oc-

eupants. If the press men wanted to see it they were compelled to descend to the ground and walk out in front of the press stand, jostled meanwhile by the horde of "officials" who seem to do everything but officiate. The score-board had but two lines on it—one for laps, the other for time. Whoever built it evidently thought a baseball battle was to be fought out. As each lap was finished the assistant scorers would sponge out the official time of the car for the previous lap and chalk in the new time. Woe betide the pressman who failed to be on the job when the times were announced!

The race was unique in several respects. In the first place it was held over a course within a half-hour's ride of a city of a million and a half of people, who could reach the scene of the contest by the expenditure of a nickel. Besides, it was a practical holiday, being the last day of a most successful series of public spectacles in honor of founders' week. Visitors from out of town who had never seen a motor car race flocked to the park by tens of thousands. Any portion of the course could be reached via the park trolleys for an additional nickel, and but for this fact and the numerous points of vantage around the entire 8 miles of the course there would have been such a congestion at the start-finish as to have seriously interfered with the race. The affair, however, was in the hands of the city. Mayor Reyburn, himself an enthusiastic motorist, felt the city's responsibility, and it was only through the excellent work of the 1,500 police and Fairmount park guards that the course was kept clear during the race. The Quaker City Motor Club furnished the flagmen, and they and the coppers worked so well together that the mayor went out of his way after the race to hunt up the Q. C. M. C. committee and congratulate it on the thoroughness of its arrangements. Almost the entire 8 miles of the circuit was roped off, so dense



LOZIER, WHICH RAN THIRD, ROUNDING TURN
Photograph by Pictorial News Co.

were the crowds. At those points where there was possibility of an accident the spectators were especially numerous. Sinuous Sweet Briar hill, where the Thomas went out with a broken crankshaft, was an especial favorite with the morbid, bloodthirsty ones who scented a possible tragedy; so were Neill drive and the Y turn at the T. A. B. fountain. Here it was that the cops had their work cut out for them.

The course, while well policed, was not well suited to the purposes of the speedsmiths. In the first place, it was too short—less than 8 miles—and had too few straights in it. Those drivers who attempted to take liberties with it suffered the penalty. Michener and his Lozier 5 were eliminated by a tricky Y turn at the foot of George's hill. "Mitch" attempted to take the turn at too high a rate of speed, and over the Lozier went. Thousands of spectators who had gathered there hoping to see some such calamity rushed to the scene. Fortunately the force of police just there was a heavy one, and they beat the crowd back while the unfortunates were being put on their feet. Neither was seriously hurt, and a few minutes later both were perched on their wrecked car, smoking as unconcernedly as if a spill were an every-day affair and watching the other contestants striving for the prize they had hoped to win.

A few minutes later the little Maxwell 28 broke its crankshaft on the ugly S turn on Neill drive, and Bittner and Smith dragged their car to the side lines and watched the race from that vantage point. Then the Stoddard-Dayton was stopped for nearly an hour with valve trouble, and got going again only to be stopped on the next round by a stripped pump gear. Next the big Thomas, which had been burning things up, came to grief with a broken crankshaft while descending Sweet Brier hill. The Pullman 40, driven by La Roche, broke a wheel at the bumpy Belmont avenue crossing, and retired. The other retirements were voluntary, being ascribable to the loss of time due to tire troubles, with no hope of regaining the lost ground.

The control stations were lined up for

half a mile along Belmont avenue. Here it was that the men "behind the gun"—those whose work renders success possible—labored like fiends, with thousands looking on and applauding their efforts. Each time a car would run up to the long platform the crowd would surge nearer to get a view of what was doing, and the numerous cops on duty here had their hands full maintaining sufficient elbow room for the repair and tire men to work.

The sixteen contestants were all lined up awaiting the word for fully a half-hour, and the first car was started just as the factory whistles in the near-by city sounded the signal for beginning the new day's toil at 7 o'clock. They were sent on their 195-mile journey at half-minute intervals, in the following order:

No.	Car.	Cyl	and H. P.	Driver
1	Maxwell	4-28	H. Buttner	
2	Apperson	4-48.4	George Davis	
3	Peerless	4-38	Bert Maucher	
4	Pullman	4-40	Max La Roche	
5	Thomas	6-70	George Salzman	
6	Studebaker	4-38.5	Frank Yerger	
7	Chadwick	6-50	Jack Harkins	
8	Stoddard-Dayton	4-34.5	E. C. Ireland	
9	Locomobile	4-40	J. W. Florida	
10	Locomobile	4-40	Geo. Robertson	
11	Amer. Loco.	6-60	L. J. Bergdall	
12	Palmer & Singer	6-60	Wm. Wallace	
14	Acme	6-45.50	Cyrus Patchke	
15	Lozier	4-45	Harry Michener	
16	Pennsylvania	4-38	Len Zengle	
17	Lozier	6-50	Ralph Mulford	

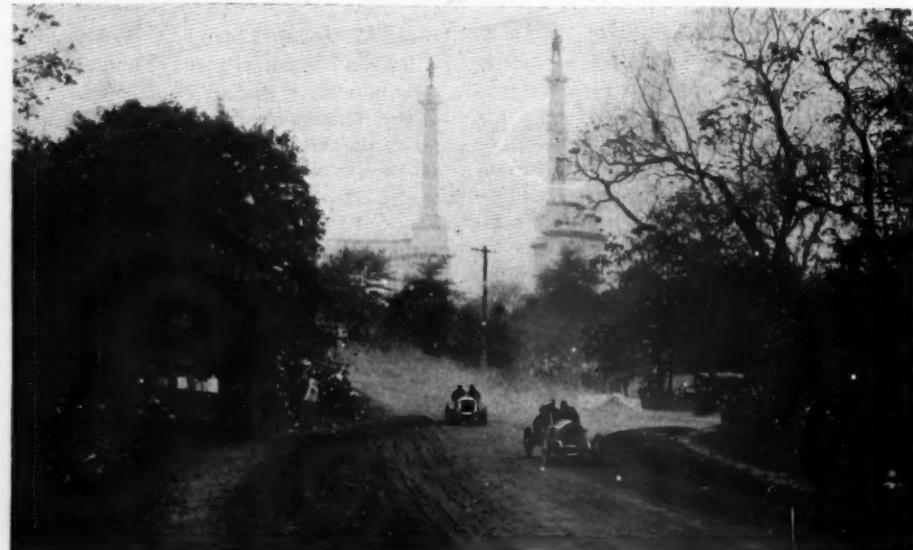
TIRE EQUIPMENT

No. 1, Ajax; Nos. 2, 3, 4, 6, 7, 14 and 16.

Diamond; Nos. 8, 12, 15 and 17, Continental; Nos. 9 and 10, Firestone; No. 11, Fisk.
*Substituted for Welch 6-51, withdrawn.

The Mulford-Hall Lozier, the last car to be sent away, had been gone but a minute and a half when the bugle signal and the familiar "car coming" heralded the approach of the first racer. It was the Apperson, which had started second. Then came the Peerless, driven by Bert Maucher, who had picked up half a minute on the Apperson; then followed the post-entry Thomas, which Salzman had driven to such purpose that he had gained a minute on the Peerless and a minute and a half on the Apperson. The Mulford Lozier was reported held up by tire trouble, and it was the last of the sixteen cars to cross the tape on the first lap, in 14:41, several of the leaders having registered their second lap ahead of it. At this point the crowd was worked up to a frenzy of excitement by the race.

The first serious trouble came in the second lap, when the Lozier 45, the favorite of half the immense crowd, went down and out on the tricky turn at the Catholic fountain, the car overturning and catching fire, but fortunately neither Michener nor Lynch, his mechanician, was hurt, although the latter was caught under the car, which was badly smashed and scorched. The Thomas still led on the



ROBERTSON IN LOCOMOBILE, FOLLOWED BY ACME
Photograph by Pictorial News Co.

RECORD OF THE TIME FOR EACH LAP MADE BY THE CARS CONTESTING IN THE FOUNDERS' WEEK

No.	Car	Start A. M.	1	2	3	4	5	6	7	8	9
10	Locomobile	7:04:30	9:52	19:36	29:07	38:07	48:04	57:31	1:06:55	1:16:26	1:25:48
14	Acme	7:06:00	10:19	20:26	30:32	40:43	51:56	1:01:32	1:11:32	1:21:31	1:32:26
17	Lozier	7:07:30	14:41	24:04	33:29	42:48	52:44	1:02:48	1:11:05	1:20:03	1:31:04
3	Peerless	7:01:00	9:57	24:24	34:23	44:31	56:51	1:06:14	1:15:04	1:26:11	1:36:37
9	Locomobile	7:04:00	9:59	19:37	29:11	38:45	48:20	57:51	1:07:25	1:17:04	1:26:37
2	Apperson	7:00:30	10:28	19:39	29:11	38:41	48:15	59:36	1:11:05	1:20:34	1:29:56
11	American Locomotive	7:05:00	10:03	20:54	29:41	39:40	49:37	59:41	1:09:47	1:19:54	1:30:02
12	Palmer & Singer	7:05:30	9:27	18:42	27:58	37:16	46:43	56:16	1:05:39	1:21:42	1:30:07
6	Studebaker	7:02:30	12:40	22:45	33:09	43:32	54:23	1:04:27	1:14:50	1:25:29	1:35:38
16	Pennsylvania	7:07:00	10:08	20:10	30:07	40:47	51:56	1:02:46	1:12:54	1:28:56	1:40:09
7	Chadwick	7:03:00	11:33	23:23	33:16	43:18	53:53	1:11:40	1:29:28	1:39:50	1:49:55
5	Thomas	7:02:00	8:57	17:37	26:32	38:47	47:32	56:22	Broke crankshaft		
8	Stoddard-Dayton	7:03:30	10:29	20:45	31:00	41:21	53:21	1:43:14	Valve hung up on 6th		
4	Pullman	7:01:30	10:44	24:34	34:23	47:20	Smashed left rear wheel				
1	Maxwell	7:00:00	11:31	22:42	33:46	Broke crankshaft					
15	Lozier	7:06:30	9:47	Tire blew out; car overturned on T. A. B. Fountain turn							

*Still running when race was stopped

†Dropped out

Times set in heavy type indicate leading car

second lap, with over a minute on the P. & S., which had about the same advantage over the Loco pair, which were traveling according to a carefully prepared schedule. The relative positions of the leading cars were maintained on the third lap, although the Apperson pushed into third place ahead of the Locos. The Maxwell was eliminated on the fourth round by a broken crankshaft. The little flyer was going like a clock, too, on an 11-minute schedule, and Driver Bittner was inconsolable at the mishap.

The completion of the fourth round witnessed a shake-up in the positions, Wallace taking advantage of the Thomas tire trouble to pull into the lead, with the Robertson Loco second, Apperson third and the Florida Loco fourth. On the fifth and sixth laps the positions were the same, apart from the fact that the Thomas, which had got going again, moved up from fifth into second place and was going like a dream when, on the seventh lap, in negotiating the bad down-hill snake curve on Sweet Brier hill the crankshaft snapped and rendered the car hors du combat. The plucky Stoddard-Dayton also went down and out for keeps on this lap after disheartening troubles. On the sixth lap one of the valves hung

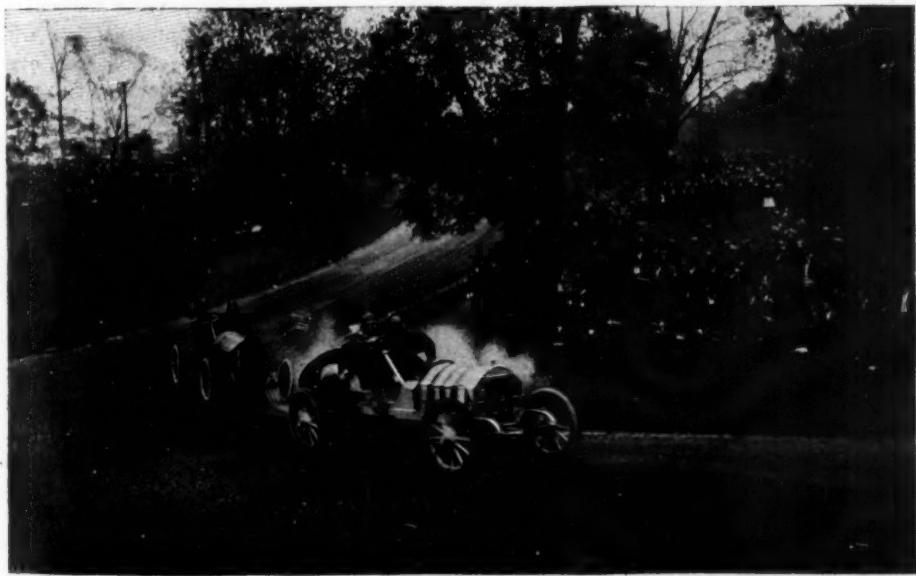
up, and Driver Ireland was compelled to get another car and make a quick run into the city to get material to make the repair. He was on the track again in 55 minutes, but on the very next lap he stripped his pump gear and retired from the strenuous race for good.

On the eighth lap the Robertson Loco swung into the lead, with the Florida Loco second and the Apperson third, and this order was maintained until the seventeenth round, when the leader stopped at the Locomobile camp for supplies and a complete set of tires, which although apparently sound, were quite hot and might give trouble at any minute. This stop, which took only 3 minutes, as word had been given previously and all hands were "on the job" like so many tigers as soon as the car stopped, let the Florida Loco into the lead; but it was a very short one—only 10 seconds—and was soon wrested from it by Robertson, who at the completion of the eighteenth lap, had once more swung into the van by the narrow margin of 10 seconds over its twin, with the Apperson still third, Bergdoll in the American Locomotive fourth, Mulford in the Lozier 50 fifth and Patchke in the Aeme sixth. Meantime the Chadwick 50 and the Pennsylvania 38 had retired, the

former after completing twelve laps and the latter on the previous round. Both had been so delayed by tire troubles that it was deemed useless to continue.

At the conclusion of the twentieth lap it looked very much like a "one-two" Loco victory. Both cars were running like clocks and with a 3-minute lead over the Apperson and twice as much over the American Locomotive, which Bergdall had been sending along at a regular schedule, the chances for such a double triumph looked excellent. Just at this stage there were nine cars still in the race—and of these, seven were on the same lap. This was announced as a record for this class of racing, and it was seen that an accident or a series of tire-trouble delays might throw the race any old way.

On the next round, however, the American Locomotive and the Palmer and Singer failed to appear—tire trouble again. The twenty-second lap saw the elimination of the plucky Apperson for the same reason. This left but six cars in the race—the two Locos, Acme, Lozier, Peerless and Studebaker. But on the same lap the Florida Loco began to experience the misfortune that had put numerous other contenders out of the race—punctures and more punctures—so that at the end of the twenty-third lap it had fallen to fifth place. The Acme, which Patchke had driven in a remarkably clever and consistent manner, averaging about 10 minutes to the circuit almost throughout the entire race, swung into second place during this round. The Acme was then 11 minutes behind Robertson's Loco, and maintained its position to the end. Mulford in the Lozier 50, who moved up into third place, had performed similarly well, but persistent trouble in the early stages put him so far back that he could not recover the ground lost. Bert Maucher, a clever local lad, who drove the Peerless, went into fourth place. This order—Robertson Loco, Acme, Mulford Lozier, Peerless and Studebaker—remained unchanged to the finish. The Florida Loco, which had finally emerged from a disheartening series of punctures and blow-outs, got going again before word was 'phoned around the course to stop the race.



NO. 10 LOCOMOBILE AND PALMER & SINGER TAKING TURN
Photograph by Pictorial News Co.

STOCK CHASSIS RACE IN FAIRMOUNT PARK, PHILADELPHIA, WON BY ROBERTSON IN THE LOCOMOBILE

TWENTY IN VANDERBILT; MORE EXPECTED

NEW YORK, Oct. 13—As the entry list for the Vanderbilt cup race, which is to be held on the Long Island motor parkway course on the 24th, now stands, there are twenty entries in all, representing America, Germany, France and Italy, and there appears to be good reason to believe that there may be further entries in the fortnight still intervening. Of the total number now in hand, thirteen are American cars, consisting of three Thomas cars, two Locomobiles, two Knox representatives, two Mathesons and one each of the Chadwick, Acme, Mora and B. L. M. makes. The seven foreign cars are the three Mercedes, a Brasier, an Isotta, a Hotchkiss and a Renault. Up to the present, all but six of the drivers have been selected. Salzman will pilot one of the Thomas cars, the other two still being without drivers, while Robertson is to have charge of a Locomobile, but his running mate for the other car of the same make is still to be chosen. The Knox entries will be handled by Basle and Bourque, and the two Mathesons will have as pilots Chevrolet, of track fame, and J. B. Ryall. Willie Haupt will handle the Great Chadwick six, while Strang has been nominated for the Renault and Patsche is to pilot the Acme entry. Of the Mercedes team, two are to be handled by professionals, W. K. Vanderbilt, Jr.'s, car being piloted by Luttgen, while Stricker will have the Graves entry. Foxhall Keene will drive his own car as usual.

Lytte's high average of 64.25 miles an hour, made in the Isotta last Saturday, has shown what can be done over the new course, and much in the way of record-breaking is to be expected of the Vanderbilt race. Lytte's performance has also created a strong speed craze among motorists generally, and the demand for permission to use the parkway stretch has been so great that it has been thrown open from 8 a. m. to 6 p. m. daily, the fee being \$2 for that time, but no night driving will be permitted until after the Vanderbilt. Motor cycle riders who have had an opportunity to try the course are anxious to have a big motor cycle event immediately after the Vanderbilt. The entry list and drivers as complete up to October 12, is as follows:

Car	Entrant	Driver
Acme.....	Cordner & Flinn	Patscheke
B. L. M.....	Thomas Williams	Williams
Chadwick.....	Chadwick Eng. Wks.	Haupt
Knox.....	Knox Auto. Co.	Iasle
Knox.....	Knox Auto. Co.	Bourque
Locomobile.....	Locomobile Co.	Robertson
Locomobile.....	Locomobile Co.	
Matheson.....	Matheson Co.	Chevrolet
Matheson.....	Matheson Co.	Ryall
Mora.....	Mora Co.	
Thomas.....	E. R. Thomas Co.	Salzmann
Thomas.....	E. R. Thomas Co.	
Thomas.....	E. R. Thomas Co.	
Brasier.....	H. Payne Whitney	
Hotchkiss.....	Hotchkiss Import Co.	
Isotta.....	C. V. Brokaw	Lytte
Mercedes.....	W. K. Vanderbilt, Jr.	Luttgen
Mercedes.....	Robert Graves	Stricker
Mercedes.....	Foxhall Keene	Keene
Renault.....	Paul Lacroix	Strang

It is rumored that Montague Roberts will be put at the wheel of one of the added Thomas cars. Kilpatrick seems a likely pilot for the Hotchkiss, in view of the fact that he has been identified with the efforts of that make this season in straightaway and 24-hour contests. Although no announcement of the final choice of driver for the second Locomobile, Jim Florida was given a try-out in the Philadelphia race of last Saturday. Pilots are getting scarce, most of those that have figured prominently in the long-distance events having already been engaged.

Joseph Tracy has concluded a contract with C. W. Matheson to look after the Matheson camp. He went to Wilkes-Barre on Tuesday and inspected the new Matheson racer. Tracy will pitch the Matheson camp at Gifford's. Stricker, who is to pilot the Jenatzy Mercedes for Robert Graves, has been at the wheel of Benz cars in the grand prix races. He formerly was a demonstrator for the late Alexander Fisher, of New York, when he was the importer of the Rochet Schneider. Strang gives Stricker's instructions credit for most of his success as a driver. That the Mora company will be represented in the race is very doubtful, unless it is decided after all to start one of the stock car models.

ANOTHER GLOBE TROTTER

Omaha, Neb., Oct 19.—Criss-crossing the North American continent in a motor car, crossing each country of any size in Europe, Asia and Africa in the same machine, and to be the first man and woman to do it, is the distinction and ambition of H. A. Hover and wife, of Kennewick, Wash., who have completed the greater part of their American undertaking. They started from Los Angeles, Cal., April 11, and expect to return to their home in the summer of 1912. When they will have completed their trip they will have traveled fully 100,000 miles in a motor car. They first went to the gulf of Lower California, dipped their front wheels into the ocean, went north in Canada as far as the roads would admit, and then started eastward to New York city. From here they will sail for Algeria, tour Egypt this winter and next year begin upon the European countries. They state they will cross each country one way, and several of the countries both ways. They have arranged their trip so that they can spend the summers in the northern part of the country, and the winters in the southern part. They hope to tour India 1 year from this winter, and on their way home will touch the Philippines and Hawaiian islands and land at San Francisco. Hover is the proprietor of the Hover Land Co., Hover, Benton county, Wash., and of the Kennewick Land Co., Kennewick, Wash. The past 10 years has

been given to promoting land companies and investing in real estate. The close attention to the business broke down his health and he was compelled to take a rest. Instead of being idle, he and his wife planned the trip. Since starting out he has gained rapidly in health, and has forgotten his business cares. The undertaking is made all the more remarkable by Mr. Hover acting as his own driver and mechanic. He is a member of the Spokane Automobile Club, and is carrying its colors. He drives a four-cylinder 20-horse-power Maxwell.

FOREIGN TRADE TIPS

Washington, D. C., Oct. 11—According to information received by the trade promotion bureau of the federal government, it will not be easy to sell American motor cars in Germany, if reliance is placed on catalogs in English. Except in the case of firms in constant commercial intercourse with the United States, English is little understood and extremely unsatisfactory. French is preferable at present, if it is absolutely impossible to use German, though English is gradually advancing. The best ways to introduce American cars are: Be sure of the superiority of the car; send a representative who speaks German fluently; let him look over the field, select an active agent, representing no other car of the same quality, and remain with him until a footing is secured; arrange for the immediate repair and replacing of parts at many places in Germany and Austria-Hungary. The local dealer should not be expected to buy the cars outright; consignment for sale on commission ought to be practicable after bonding the agent and making him responsible for credit sales.

Breslau, a city of 490,000 people, has well-paved streets, good for motor cars, except in the old town, where the streets are too narrow. The population of Silesia is 4,942,611, embracing thirty-three cities whose population runs from 10,000 to 85,000. The country, networked as usual with excellent macadamized roads, is almost level, and a few hours' journey southward brings the traveler to the picturesque Giant mountains on the Austrian border.

The use of motor cars in Stavanger, Norway, and vicinity has been very limited up to the present time, but indications now point to greater activity in this line. The need of better and quicker transportation inland is recognized, and many of the barriers that have restricted the use of motor cars heretofore either have been removed or will be shortly. The public highways in Norway are very narrow, as a rule, and in a mountain district like Stavanger they are steep and contain many curves. The kind of cars that will be best adapted to that country must be of strong make and able to climb. It is probable

that the most frequently-traveled tourist routes will soon be operated by motor cars, and for that reason omnibus cars will be most in demand at first, but it is safe to calculate that when motor cars have become general and all barriers to their operation removed many will be bought for private use also in this country.

EXPORTS AND IMPORTS

Washington, D. C., Oct. 11.—Official returns of the bureau of statistics at Washington, D. C., show that during August 156 motor cars, valued at \$346,796, were shipped abroad, together with \$44,074 worth of parts. During the corresponding month of last year the number of cars exported was 256, valued at \$437,468, while the value of the parts exported was \$69,054. The number of cars exported during the first 8 months of this year was 1,684, valued at \$3,569,962, as against 2,308 cars, valued at \$4,263,437, exported during the same period of last year. Exports of parts declined in value from \$488,575 during the first 8 months of 1907, to \$434,849 during the same period of this year. During August last cars and parts were shipped to the following countries: United Kingdom, \$125,904; France, \$15,565; Germany, \$14,508; Italy, \$93; other European countries, \$4,796; British North America, \$173,768; Mexico, \$15,740; West Indies and Bermuda, \$6,055; South America, \$6,329; British East Indies, \$2,147; British Australasia, \$12,770; other Asia and Oceania, \$10,459; other countries, \$2,736. One hundred and seventy-nine motor cars, valued at \$280,970, were imported into this country during August last, while in August a year ago the number was 69 and the value \$229,704. During the 8 months' period the number of cars imported increased from 628 in 1907 to 737 in 1908, but the value decreased from \$2,057,294 to \$1,451,594. In other words, while the number of cars imported increased 109, the value decreased \$605,700. The following countries shipped motor cars to the United States in August: United Kingdom, 6, valued at \$17,710; France, 143, valued at \$210,474; Italy, 27, valued at \$45,536; other countries, 3, valued at \$7,250.

ROAD CONGRESS OPENS

Paris, Oct. 12.—M. Barthou, the French minister of public works, officially welcomed the delegates to the first international good roads congress, which was formally opened today. The delegates represent twenty-four different countries, including the United States, Great Britain, Germany, Italy, Russia and many more distant lands, such as Brazil, Chile, Mexico, Japan, China and India. The meeting was opened by speeches by the delegates from some of the larger countries, L. W. Page, director of the public roads bureau of the agricultural department at Washington, speaking for America. He praised the initiative of France.

BUSINESS RIGS NEXT

A. A. A. Accepts Powell Evans Trophy for Big Commercial Vehicle Competition

New York, Oct. 13.—If present plans materialize, and the American manufacturers of commercial vehicles come forward with a plenteous entry, there will be a notable first contest next spring for the Powell Evans \$2,000 trophy for commercial vehicles. This trophy, donated by Mr. Evans, who is president of the Automobile Club of Philadelphia, was formally accepted at the quarterly meeting of the board of directors of the American Automobile Association, held here last Friday, with First Vice-President Lewis R. Spears, of Boston, presiding, in the absence of President William H. Hotchkiss, of Buffalo, who was unable to attend.

For the greater convenience of the association's membership at large, it was decided that the office of the touring board should be removed to New York city in the near future and its work carried on from the general headquarters of the organization, at 437 Fifth avenue. Powell Evans was named as chairman of what hereafter will be known as the touring, information and maps board, and Frank B. Hower, president of the Automobile Club of Buffalo, who has been chairman of the touring board, will become chairman of the contests board, which will succeed the technical board, and have charge of all contests other than racing and speed events, the same to include all touring, technical, endurance and economy contests, as well as hill-climbs. The racing board, as heretofore, will continue in charge of speed contests.

Various recommendations of President Hotchkiss were adopted, including an enlargement of the national board of directors, so that every club throughout the country will have a member on the board. R. D. Inman, of Portland, Ore., was elected a director to represent the Portland Automobile Club. A long list of individual members was also passed upon, and action was taken providing that any individual member whose application is filed after this date will be extended membership privileges covering the fiscal year ending December 1, 1909.

President Hotchkiss was authorized to appoint a committee of five to represent the A. A. A. on the National Conservation Commission, at the suggestion of Gifford Pinchot, chairman of this government body. The advisability of issuing a monthly or quarterly bulletin will come up for consideration at the next meeting.

The executive committee having previously referred to President Hotchkiss and Secretary Elliott the solution of the California situation, their recommendation was that provision be made for two state

bodies in a commonwealth of such great geographical extent, and this plan was adopted by the meeting.

The offer of the show committee of the American Motor Car Manufacturers' Association to allow space to the A. A. A. at the Grand Central palace exhibition in New York city was accepted. It was also decided to hold a general meeting of the association at the time of this show and again during the Madison Square garden show in January. Application will be made to the Trunk Line Association for reduced railroad rates during the weeks of these shows.

WEST WANIS ROAD RACE

San Francisco, Cal., Oct. 9.—There is considerable agitation here in favor of the holding of a long road race close to San Francisco, and it seems not improbable that this event will be pulled off within the next few weeks. There are among the San Francisco dealers many who are not in favor of circular track racing, believing that that feature of the sport is too dangerous, and with its resultant accidents hurts the motor car business. However this may be, they have consistently refused to enter their cars, and as a consequence the race meets about here during the past season have been filled out by a comparatively small number of the agents. The demand for a road race comes not alone from those who decline to take the risks of the track, but also from those who are always ready for every kind of contest that comes along and that promises plenty of publicity. It is thought, therefore, that there would be ten or a dozen representative cars in the event, and it is hoped that some of the eastern racing cars and machines may be sent out by the factories if the event is finally arranged. The committee on contests of the Automobile Dealers' Association has the matter under consideration at the present time and is figuring out where they can secure a course of some 250 or 300 miles that would be suitable. There are some fine roads across the bay in Alameda county, one of them being a triangle of about 30 miles over which a 24-hour endurance run was held a few weeks ago.

COAST 24 IS PLANNED

Los Angeles, Cal., Oct. 8.—It is announced that Los Angeles is going to have a 24-hour track race at Ascot park on October 17 and 18. The promoter is Ike Schlank of Omaha. The racing is to begin at 4 o'clock Saturday afternoon and last until 10 o'clock Sunday evening. Arrangements will be made for the ample lighting of the track, and all other precautions will be taken to give as great safety as possible to the contest. This will be the first event of the kind ever carried out in this state, and naturally there is great interest being displayed because of the fast races in the east.

PRIVATE GARAGES NUMEROUS IN CHICAGO

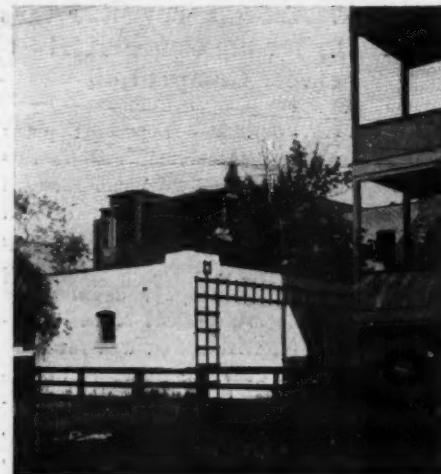
ILLINOIS, at the end of September, boasted a motoring army of about 16,500, according to returns from the secretary of state at Springfield, of which number probably two-thirds of the cars are owned in Chicago. This is regarded as a commendable growth in the past year and accompanying it is a constantly-increasing demand for information regarding garages and their cost of construction and equipment. Mostly these are from owners direct who are contemplating building garages of their own and indicates the strong hold motoring is gaining in the community.

Chicago is making rapid strides, though, in the construction of garages and while no definite statistics is obtainable it is estimated that in Chicago alone there are 175 public garages and at least 3,000 private ones. The latter mostly are old barns from which the horses have been ousted, but there are many that have been built expressly for motor cars within the last year or so, ranging in prices from \$140 for the small portable ones to the many thousands that the magnificent motor palace of Victor F. Lawson will cost. The Lawson place is regarded as the finest private garage in Chicago. It has not as yet been completed, but when it is done it undoubtedly will represent the ideal. It will accommodate ten cars, is equipped with a gasoline, oil and kerosene system that cost as much as an ordinary garage, while on the second floor are sleeping accommodations for servants of the Lawson household.

In the way of public places it is claimed that the Rambler garage at 1218 Sheridan road is the largest or will be when completed, there being three floors each 110 feet square, while there are accommodations for 300 cars. This garage rents, repairs and stores cars and in addition maintains a switchboard which can charge a dozen electrics at a time. The



BELDEN JONES' PORTABLE GARAGE



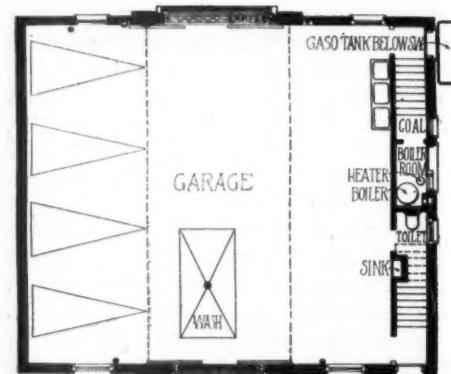
GARAGES FOR FLAT DWELLERS

Terminal garage at Evanston and Sunny-side avenues is another example of a big place, there being room for 100 cars there.

But getting back to the private garage, in which the user is most interested, Chicago's most novel motor car stable is found at 1932 Diversey boulevard in the apartment building of Herman M. Hoelscher, a three-flat structure, each of which has its own garage. The garage addition is found in the rear, being divided into three complete and distinct garages, each with its own toilet room, wash basins, etc. The drain runs through the catch basin on the outside of the building. From this catch basin the water is taken into the main catch basin of the building. Should oil or gasoline get into the waste pipe and an explosion follow the possible danger is reduced to a minimum. The main doors in each garage are 12 feet wide, with one of the panels arranged for

a smaller door. Each garage is provided with hot and cold water connections, and in addition each has the Bowser gasoline and oil system. The building is heated by a hot water system and there are no windows or doors or openings of any kind opening toward the house, so the noise from the garage cannot be heard in the apartments. The floors of the garages are cement; the walls are brick, and the roof is constructed of 2 by 4 scantlings spiked together. Each garage has telephonic communication with the apartment of its user in the flat building.

Roger C. Sullivan, a Democratic politician of national fame, is an ardent motorist, and he has just completed what he considers a model garage at 1269 Washington boulevard and which he estimates cost him \$7,000. Mr. Sullivan really kills two birds with one stone, for on the second floor he houses all of his servants, who have comparatively luxurious quarters. It is a pressed brick structure, entered from the alley by sliding doors, with an exit on the other side of the building. In the garage proper is a 16-foot



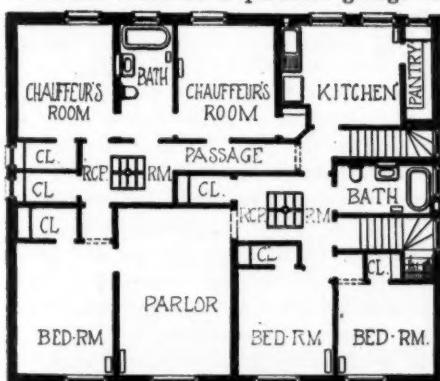
FIRST FLOOR OF SULLIVAN GARAGE



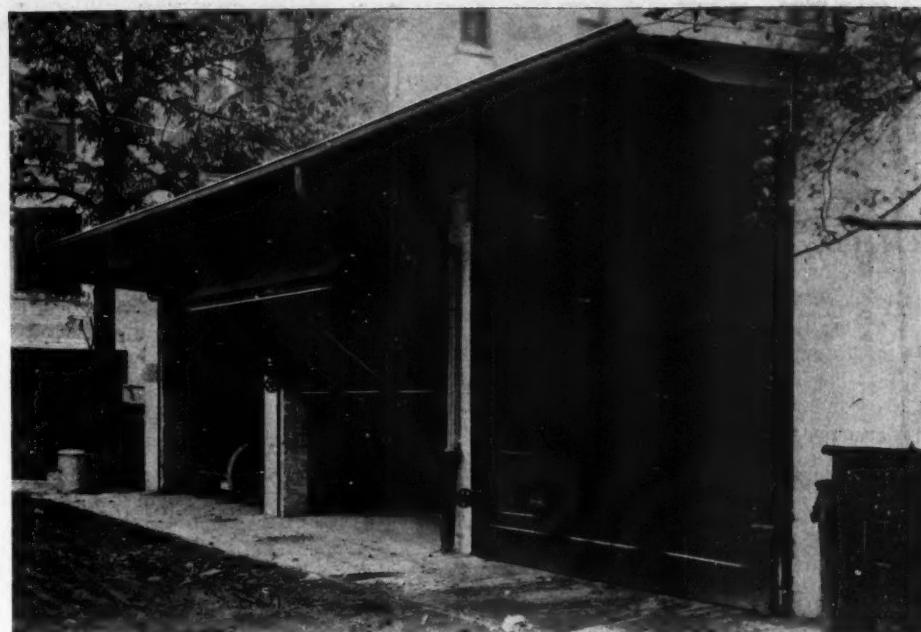
EXTERIOR OF GARAGE BUILT FOR ROGER C. SULLIVAN

wash rack, the floor being cement. On one side are the toilet room, boiler room and coal bin, while in the way of appointments he has a five-barrel gasoline system of the Bowser type, with a meter for registering the fuel consumption. On the second floor, where the servants live, there are seven rooms, and baths, which include two rooms for chauffeurs, one 10 by 6 and the other 10 by 4. The kitchen, 12.8 feet in length and 10 feet in width, is on the same side, while on the other side are three big bedrooms and a parlor. Running through the center of the building are one bathroom, a sky-lighted reception room, linen closets and three clothes closets. The other bath, for the chauffeurs, is located between the rooms of those two employees of Mr. Sullivan.

Everyone, though, is not as fortunately situated as is Mr. Sullivan in the way of living in a house with plenty of room for building a garage. Flat dwellers are among the unfortunates and in consequence of this many have to store their cars in public places. Some do not and among them is Belden D. Jones, at 756 Winthrop avenue, a big apartment building with a large back yard. Here Mr. Jones has installed a portable garage in



SECOND FLOOR OF SULLIVAN GARAGE



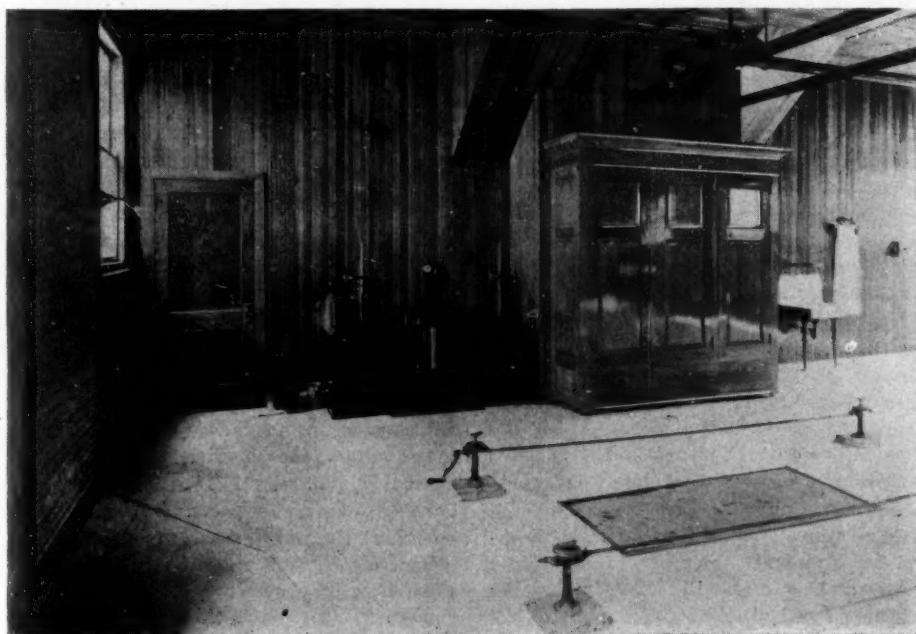
UNIQUE DOORS FITTED TO HOELSCHER FLAT GARAGES

which there is room for just one car. The structure is of the Karr type, and is 12 by 16 feet and made of sheet iron, with a wood interior. Also there is a work bench which cost \$5, while the garage itself was put up at an expense of \$140, floor and all. In addition Mr. Jones has a 180-gallon gasoline tank installed, so he is just as cozy as if he had a much larger garage.

There are others who rent old horse barns, in some cases remodeling them to suit motoring conditions. Others are satisfied with things the way they find them, being content to utilize the barn simply for storage purposes. This sudden growth of motoring has resulted in profit to house owners who have barns but who long ago gave up the horse habit and have not as yet purchased motor cars. In consequence

of this demand for storage room there are few empty barns left in residence neighborhoods and in some cases two and three owners club together in one place. In this manner expenses are greatly reduced, for it is possible to get a barn for around \$5 a month, which, split in two, reduces the garage expense to a minimum. Of course, few of these structures are heated, so when winter comes along it is a constant fight with Jack Frost at which time the garage man often gets an unexpected customer during the cold spell. This winter storage proposition has become an important one and while many drive the year around there are others who store their cars at the first sign of bad weather. In consequence the big storage warehouses are cutting in and last winter it was possible in Chicago to get dead storage accommodations at around \$2 a month.

Another benefit derived from having one's own garage is the opportunity it affords to buy supplies at wholesale rates.



INSIDE VIEW OF SULLIVAN'S BUILDING, SHOWING MODERN EQUIPMENT



INTERIOR OF JONES' GARAGE

THE UTILITY OF CLUTCHES ON MOTOR CARS

CLUTCHES may be classified as follows: cone, disk, band; cone clutches may, in turn, be subdivided as follows: metal-to-metal, leather-faced, cork insert; while disk type may be classed as: leather-faced, multiple disk, cork insert; and band clutches may be put down as of the constricting, spiral, or expanding types. Clutches, of whatever type or class, have but one prime object, that is, to enable the operator to start and stop the car without having to stop the motor. There is a secondary consideration, if we take into account the fact that it is convenient to be able to slip the clutch, on occasion. Some types lend themselves to this secondary purpose with greater facility than others, and it is also true that some clutches are most easy of application, all things considered.

With clutches, the temptation is to champion some one type. This temptation is dictated, perhaps, by limited experience, for the most part. If one becomes accustomed to using one type it naturally influences his inclinations, and he ultimately arrives at a point where he is blind to the perfection of types with which he has had the least to do. It is not too much to say, that of all the types of clutches known in connection with the motor car, none is so inferior as to fail to work, if it is properly designed. On the start, then, it is proper to point out that, in service, clutches may be of any type and still be so good as to be commendable.

Every motorists has his preference, as is amply borne out by the fact that every type of clutch mentioned is now represented on the motor car, and the volume of business is equal to the output in nearly every case. How futile it is, then, to deny to a type of clutch the place it actually holds, in spite of the fact that one would not have to go far to find a defamer who would be willing to swear that certain types are useless. If we proceed in an unbiased manner to a full investigation of clutches, with the idea of realizing correct methods of design and with the hope of shedding light upon the materials to use, not forgetting that in the manipulation of clutches something is to be gained by favoring the several types in a way consistent with their respective characteristics, the result will be of benefit to the designer, the constructor and the user.

Designed Thirteen Styles

To show the extent to which the clutch question persists in occupying the minds of designers, it will only be necessary to relate a circumstance or two. In one of the best-known cars its design and development was attended by the construction and use of some thirteen different clutches, representing all the types known to designers. All the clutches worked so well

EDITOR'S NOTE—This is Part I of a series of articles by Thomas J. Fay, E. E., President, Society Automobile Engineers, on the Design and Operation of Clutches. Additional parts will appear in successive issues of Motor Age.

that the car might have been put on the market, with any one of them, and have made a success. The history of several of the better-known cars is largely the same. The clutch seems to have attracted the notice of the designers with more frequency than any other one essential. In some cases good clutches were superseded by others that proved to be far inferior. Of course, this condition was not tolerated any longer than the time required to make another change.

It might be said, why make changes? Again, why stick to the "ox-cart"? It is easy to see that clutches must be a bone of contention for some time to come. When the time arrives that speed changes can be made through the clutch, then will be the time to shed the sliding gear-set, and not before. Speed changes cannot be made through the clutch as a regular and continued operation now, nor will the future be likely to afford us more kindness in this respect. On the other hand, if motors ever do become as flexible as the six-cylinder advocates say they are now, all that will be required is a clutch that will stand slipping for short intervals of time, provided the slipping can take place under well-regulated conditions.

A well-proportioned motor that delivers power in proportion to speed, over a considerable range of available speeds, would come very close to the point of eliminating the gearset, without being so over big as to debar its use. This would hold good in the cases in which the aim would be utility, rather than the maximum possible speed. In other words, if the gear ratio is fixed for moderation, and the motor is provided with a little extra power, a clutch that will admit of slipping will then do the rest. But even with all the other facilities available, it would not be wise to take to the road without the gearset unless the clutch would lend itself to the slipping operation, as there are spots in otherwise fair roads in which cars will stick and in which the power of the motor must be exerted to the maximum. A little extra flywheel would, of course, help out. This is a facility that is rarely afforded on account of the desire to reduce weight, even if it has to be taken out of the wrong place. In six-cylinder motors, the opportunity to realize nearly the gearless condition, assuming the clutch is so designed as to afford a due measure of slipping, is a good possibility, but the feather-weight flywheel generally defeats the project. The most ill-behaved car the author ever had the misfortune to kill time in was otherwise so good as to be noteworthy, barring the bucking under

severe conditions, in the absence of enough flywheel to complete the cycle on the "high," in which gear it was said to be big enough to go through a mud hole.

With sufficient flywheel it would be possible to eliminate gear changes to some extent, if not entirely, provided the clutch would stand the slipping. It would have to slip to any desired degree. A fierce clutch would never do. Nor would one of the kind that would either hold entirely, or be entirely free. There are such clutches and they serve their purpose because the gearset enables the operator to run the motor fast or slow, independent of the car speed, so that the power of the motor always matches the road conditions. Some clutches are prone to slip, in that they have not the requisite holding power. This is due to faulty design in every case, some difference accounting for the failure on the one hand, and the success on the other.

Cause of Fierceness

This property seems to be characteristic of some types, and is rarely found in others. Those that are prone to exhibit this fault are kept in working order, as a rule, by taking such measures as will prevent this action, such as oiling. But others that lack the fault will hold just as well as the fierce kind. Fierce clutches are usually the kind in which the engaging movement is abrupt. In other words, from the instant of contact of the shoes to the point of full on, the travel is short and quick. Certain toggle motions have this property. In cone clutches, certain angles are known as sticking angles and clutches in which such angles are found will be fierce. Some clutches have a wedge motion, and if the wedge is so designed as to apply the pressure in a short travel, and the pressure is relatively great, a fierce clutch will result. In certain cam motions the same phenomenon will be noticed. The process is the same, in that the pressure is great and reached a maximum very quickly. Fierceness is sometimes a sign that the clutch is not powerful enough for the car. The adjustment has then to be so tight that the action is just about that which would be expected of a clutch in which the principle is wrongly applied.

A disk clutch, for illustration, can become fierce, if the spring is too strong, the disks are too few, or of a radius less than that likely to produce good results, in the absence of oil. Without oil, this type fulfills the conditions of a fierce, conical clutch in that the distance—or time—of travel between initial contact and final maximum pressure is small. In a disk clutch it is the oil that introduces the factor of time since the oil has to be squeezed out from between the disks before the clutch will take hold sufficiently to drive the car. The slippery surface

afforded by the lubricant will stay in place for a time depending upon conditions as follows: The pressure between the disks, the mobility of the lubricant; the distance the lubricant has to travel to escape; the unctuousness of the lubricant.

If the lubricant is lacking in mobility it will hold to a constant viscosity under the changes in temperature that are wholly unavoidable in a clutch. The absence of mobility is of greater importance than viscosity at some constant temperature. Body is something to take into account, in that the lubricant can easily have body in excess of that desired with the result that the clutch would not take a hold within the desired time, if at all. Just how slippery the surface should be in a given clutch is something to determine, and the unctuousness of the lubricant must on that account be taken into consideration.

Cork Inserts Good

Clutches in which cork inserts are properly applied are probably as far away from the fierce condition as it is possible to go. Cork is a peculiar product and it performs in accordance with its peculiar characteristics. In the first instance, it has a high co-efficient of friction, so that high pressure is not necessary, and its co-efficient of friction is but little influenced by the question of lubrication. In other words, the cork will hold on a dry surface or if the surface is lubricated and the degree of polish of the surface is not a factor of such marked import as would be the case in the absence of the cork. High temperatures are not so prone to char cork as they would leather or fiber. This is an important matter in clutches. Even wood will be charred by the heat generated in clutches under certain conditions, which is fair evidence of the fact that the temperature can raise to a point as high as 500 degrees centigrade.

How futile it would be, then, to anticipate the use of leather, or fiber—compressed wood pulp—in clutches, with the idea of taking advantage of the slipping phenomenon, in the absence of change gear. Of course, cork is wood, but there is a decided difference as between wood and cork, as it is used in clutches. This will best be understood by illustrating the method of applying the cork. Fig. 1, showing a three-plate disk clutch, is a good illustration of its application; the middle disk A is perforated and the perforations are filled with cork. The cork is pressed into the perforations so tightly that, in view of its elasticity, it overflows the holes and protrudes beyond the surface. As a result, the compression of the plates ends in a close contact of the cork inserts against the faces of the plates in juxtaposition, and in view of the high co-efficient of friction of the cork, the negative torque of the clutch becomes a maximum.

The Negative Torque

If the pressure be great, the cork in-

serts compress sufficiently to become flush with the plate, but without losing the transmission value of the cork. This increase in pressure may bring the plates into metal-to-metal contact and if it does, the ability of the clutch will be increased. The ability of a clutch can be stated in terms of negative torque, and when the negative torque value equals the torque of the motor—positive torque—the transmission will be on a basis of 100 per cent. In a motor the torque may be estimated as follows:

$$2 \quad RS$$

$P = \frac{33,000}{RS}$ In which:

33,000

P = pull in pounds—average—

= 3,1416

R = radius of the lever arm.

S = angular velocity of the crankshaft—revolutions per minute.

In a clutch, the negative torque may be estimated in the same way, taking into account the fact that a reserve factor is valuable, in order that the ability of the clutch will be well beyond the slipping point, when the motor is delivering its maximum power. If the negative torque of the clutch barely equals the torque of the motor, slipping will ensue for reasons as follows: Flywheel effect adds momentarily to the torque of the motor; the inertia component puts work on the clutch, under certain conditions; the condition of the clutch will not remain constant.

The best probable ability of the clutch might be regarded as that which would register a negative torque equal to about twice the average torque of the motor. This difference would be enough to insure the holding ability of the clutch, under all road conditions.

Let us take up one other phase of this subject, the question of the ability of clutches in the abstract, taking for illustration a clutch of say 20 horsepower at 100 revolutions per minute. It might appear at first sight as if this clutch would do for any 20-horsepower motor. But a motor can deliver 20 horsepower under several conditions of torque. In other words, the torque of all 20-horsepower motors would not be the same. The clutch, then, should be compared on a basis of torque and not of horsepower. If it is true that the negative torque of a clutch should be in excess of the torque of the motor, by an amount equal to 100 per cent, the formula would be as follows:

$$2 \quad RS$$

$P' = \frac{33,000 \times Q}{RS}$ In which

33,000 \times Q

P' = negative torque of the clutch.

= 3,1416;

R = mean radius of the clutch bearing surfaces.

S = angular velocity of the clutch members;

$Q = 0.50$.

P' is the actual pull, and the co-efficient of friction must be taken into account in the process of determining the necessary

pressure of the clutch spring. If the pressure is not directly applied, the angularity and the lever advantage must be allowed for. In a single pair of disks, pressed together by a spring, the pressure may be regarded as direct. In this case, if cork inserts are used, the spring pressure would have to be three times the value of P' , on the ground that the co-efficient would be about 0.33. To reduce the spring pressure, it would be necessary to do one of two things, that is, increase the mean radius of the members, or increase the number of disks. Theoretically, the spring pressure would decrease directly as the disks increase, or inversely as the number of effective disks. Disks, to be effective, must be prevented from rotating.

Limit Disk Number

The number of disks must be limited, else the pressure between the respective surfaces would fall below the point of pressing the oil out from between them, on a basis of the reasoning as above set forth. On the other hand, the number of disks might be so great as to produce a clutching effect, due to the resistance of the lubricant used. The capillary attraction of all lubricants is so great that the section of the lubricant is sheared, before the clinging effect of the lubricant is overcome. On this account, it is possible to so design a clutch using a large number of disks, that the work required to shear the numerous sections of the entrapped oil, will equal the ability of the motor, plus a reasonable reserve. In this scheme it would not be the idea to have the disks come into contact with each other at all. The slippery surface, due to the oil, would always interpose, and the oil would be the only part that would be consumed, and is all that would have to be replaced.

Some clutches of the multiple disk variety come so near to this ideal that it is necessary to select oil of a character almost devoid of unctuousness, and of almost no body. Mixtures of light mineral oil and kerosene are sometimes used for such purposes. Centrifugal force plays a part in the clutch if the radii of the members is sufficient to render this force potent. The oil is thus cast off and the members are then free to contact with each other. The phenomena termed drag is present in clutches of this character and it increases in direct proportion to the number of films of oil. This is explained in the same way that it is possible to show that a clutch can be so constructed that it is the shearing of the oil that affords the resistance necessary to set up the negative torque.

The drag is reduced if the disks are parted very much, for then the shearing moment is eliminated and molecular resistance is all there is to be overcome, again illustrating the effect of different grades of oil. While drag is a characteristic of clutches of the multiple disk genera, they are not valueless on that account, since drag can be the lesser of two evils. In the cone clutch the inertia of the mass

is a detriment; the mass itself is not so great, but its radius is usually excessive. Cone clutches are from 15 inches to 18 inches in diameter and even aluminum weighs enough to be felt. It must be remembered, moreover, that the aluminum is covered with leather and the actual weight of the clutch rim is sufficient to set up a flywheel effect. This is most noticeable when the sliding gears are collided with each other. If the clutch rim is not carefully whittled down, to eliminate all possible weight, the sliding gears will soon show the effect of it.

Have Shorter Radii

In the multiple-disk clutches the radii are less, in view of the fact that the disks are about one-half the diameter of the rim of a cone clutch of the same ability. If we take into account the fact that the inertia of the mass is proportioned to V^2W —the square of the velocity multiplied by the weight—it is easy enough to see that diameter plays an important part, especially since the velocity is as follows:

$$V = 2 \cdot R s \text{ in which,}$$

V = speed of the mass in feet per second,

$$= 3.1416$$

R = radius of the mass in feet—from the axis of rotation;

S = angular velocity in feet per second.

From the formula it would appear as if whittling the rim down to the smallest possible section is not nearly so good as reducing the radius as much as possible. The effect of mass is in direct proportion, while the effect of speed is as the square.

Avoid Clutch Slipping

As clutches are at present designed, the question is, can slipping be tolerated? or, can clutches be slipped to control the speed of a car? It is believed not. The average clutch has very little of the character of the average braking system and when it comes to brakes they do not last so long that it is desirable to wear them out sooner than they will naturally need replacement. In other words, it seems quite out of the question to consider the clutches of today as suitable for the double purpose of clutching and speed controlling, by way of slipping the clutch at will. It is not uncommon to hear motorists talking of the multiple-disk clutch as one that undergoes little or no deterioration as a result of continuous slipping under variations of load.

They seem to think that the large surface exposed, especially in view of the fact that the disks are submerged in oil, will prevent damage if the clutch is caused to slip. They forget that the disks are thin, and also that they are loose on the splines, keys, or feathers that prevent the disks from rotating. No member keyed onto a shaft will stand much abuse. This is especially so, if the member has but little bearing surface on the key. Even a considerable number of such members work-

drives the car. This clutch will come near affording the special regulating advantage, but it will give out sooner if it is caused to slip, than it will if it is confined to its legitimate function, and the difference in its life will be very great.

Some designers are of the opinion that clutches, as now made, will stand any amount of slipping, and they will go so far as to point to their products as examples. The main trouble with some of these wonderful clutches is that they slip when they should hold, and they are also fierce. In these clutches, fierceness is bound to follow adjustment, and as a result of the buffs that fierce clutches are heir to, the time they will stay adjusted is the time it takes to negotiate a fairly long hill of some grade pretensions. When it comes to the multiplication of driving faces difficulty is encountered in having all the faces bear equally. A dividing head on a milling machine is about the most exact device possible to use and the dividing head is not so exact as to assure equality of pressure. Even assuming that a dividing head would afford practical equality of spacing, there is the cutter problem to master.

A comparatively small number of cork insert disks of sufficient thickness would assure immunity from key-way trouble. With a liberal section there would be little room for increasing the number, but the cork would make up for the smaller number of disks. Fig. 2 is a cross-section and plan of just such a clutch and if change gears are provided to take the main work, then this type of clutch would be of excellent advantage in a pinch. There are those who think they can keep to the high gear under all and diverse circumstances. They can, to a large extent, if the clutch performance is considerably better than it is on cars that are not noted for their low first cost.

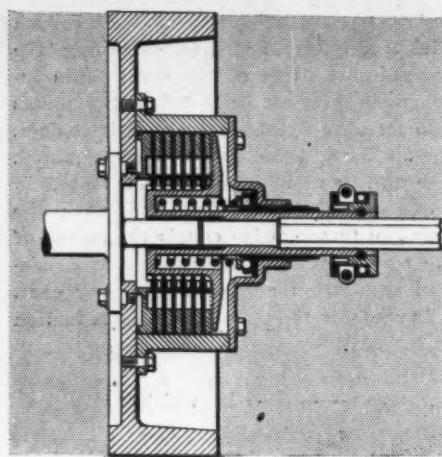


FIG. 2

ing in unison will fail to stand up under the work because the joint is not firm. Lost motion is bound to result in more lost motion in a short while, and in a multiple disk clutch the disks soon fray out and interfere with each other and the clutching functions, within a space of time so short as to surprise even the most experienced.

Tempered saw-blade steel, of some thickness, will stand quite some work of the kind in question, especially if the radius of the bore of the disks so made is considerable. If, however, the saw-blades are only one-half of the total number of disks, and the relating members are of bronze, it is not impossible to anticipate which of the two links in the chain, as it were, will show distress, first and soon. One of the best clutches the author knows about is of the multiple-disk type, in which all the disks are tempered saw-blade steel, and so designed that the pressure on the driving faces is very low indeed. This clutch runs in oil and the metal probably does not come together to the entire exclusion of all the oil, when the clutch holds and

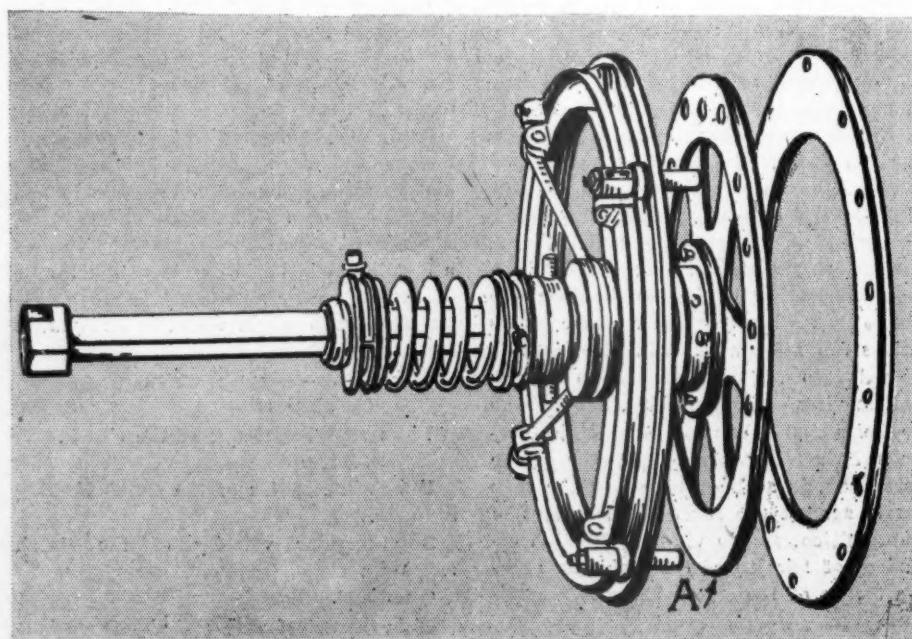
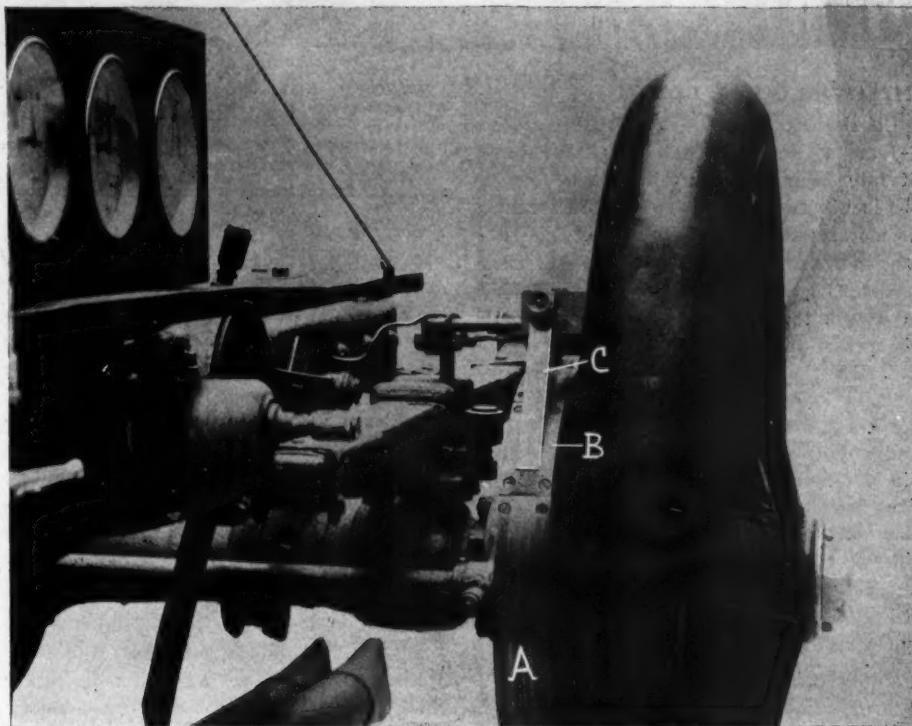


FIG. 1

WHEELSLIP TESTS AT BROOKLANDS TRACK

SOME interesting tests were recently carried out by S. F. Edge, of the Napier company, at Brooklands track, England. These were designed to ascertain exactly the amount of slip which takes place at various speeds between the tire and the road, so to find out as far as possible how far this phenomena is responsible for tire wear and tear. The tests simply lay in ascertaining the ratio between the actual number and the theoretical number of revolutions of each wheel over a known distance. The distance used was one lap of Brooklands track, a circuit of 2.675 miles, which should have required theoretically 1,653 revolutions of the wheel of the car used. This was a 60-horsepower six-cylinder Napier.

In order to ascertain the actual number of revolutions of each wheel over this distance at various speeds, the car was fitted with four revolution counters. These embodied a simple clockwork motion in conjunction with an electric escapement, and for this purpose a make-and-break disk A was mounted upon each road wheel, the attachment to one of the back wheels being shown. The device was a simple fiber disk A intersected with a brass fillet B, which made and broke an electric circuit through a spring brush C held against the edge of the disk, and thus provided the escapement for the clockwork revolution meters. Only one front wheel disk was



CLOCKWORK DEVICE USED IN MAKING SIDESLIP TESTS

used as the speed-indicator drive interfered with the fitting of a disk to the off side front wheel. As this car passed over the starting and the finishing lines the apparatus was switched in and out by the

driver. The accompanying table shows the results of these interesting tests. It is noticeable from a study of the table of results that there is a considerable decrease of front wheel revolutions as the speed increases, until very high speeds are maintained. From 20 to 76 miles per hour there was a decrease in the number of revolutions of the front wheels per mile. The further increase is to be explained by the fact that at high speeds a different and wider course had to be taken over the track. At 20 miles an hour the revolutions were as near as possible equal and it is quite likely that some of the difference between these figures and those for higher speeds may be accounted for by the fact that flying starts were made and there may have been some slight inaccuracies in switching on and off. The 40 miles per hour figures may be explained in this way, that at this speed the engine ran, throttled down, peculiarly smoothly, and thus the road wheels received no sudden shocks. The enormous jumps at 90 miles an hour are very graphically shown by the diverse figures for that speed. The figures showing the excess of off, or outside, back wheel revolutions over near, or inside, back wheel revolutions shows that in going round a curve the inside wheel does most of the slipping. This never exceeded three revolutions per minute, which it attained at 20 miles per hour.

Taking into consideration the fact that these tests were held on a comparatively smooth track, it is quite easy to see some, at least, of the reasons for heavy tire upkeep in ordinary use on the road.

RESULTS OF WHEELSLIP TESTS ON BROOKLANDS TRACK, BY S. F. EDGE

Number miles per hour	Front Wheel	Inside back wheel	Outside back wheel	Excess of back wheel revolutions over front wheel	Excess of back wheel revolutions over outside back wheel	Excess of outside back wheel revolutions over inside back wheel	Excess of back wheel revolutions over those at 20 miles per hour	Excess of front wheel revolutions over those at 20 miles per hour
20	1654	1649	1652	. . . . .	. . . . .	3	. . . . .	. . . . .
30	1651	1668	1660	18	. . . . .	1	17	. . . . .
40	1651	1655	1656	5	. . . . .	4	. . . . .	. . . . .
60	1654	1670	1665	16	5	. . . . .	22	. . . . .
76	1640	1681	1683	43	. . . . .	3	31	. . . . .
90	1697	1783	1786	89	. . . . .	3	184	33



NAPIER CAR EQUIPPED FOR THE WHEELSLIP TESTS

IMPROVISED CAR LOCK

Charleston, W. Va.—Editor Motor Age—I am a reader of Motor Age and have of late been interested in not a few of the locking devices to prevent the stealing of motor cars while not in use. The objection I have to all of them is that they seem to be too expensive. I have an idea of a lock that can be manufactured very cheap and should meet with a ready market. In the rough sketch enclosed, the lock is in two parts: The lock or top portion A with a slot B through the center, and a bottom part C that has a notched pin D for entering the slot B, and a sector-like bottom portion E, which fits under the quadrant carrying the levers at the side of the car. In using this lock it is but necessary to place the sector portion E in place and slip the top portion A over the stem D; the lock being self-acting, this is all that is necessary. Should the brake lever work forward and the notches be on top instead of beneath the quadrant F, it is but necessary to reverse this portion. This would be a cheap device and I see no reason why it could not be adopted. Where planetary gears are used, the quadrant can be used by filing notches in it.—J. Harvey Phillips.

LIKES DECARBONIZER

Milwaukee, Wis.—Editor Motor Age—I have read with some interest the communication of P. J. Kress in Motor Age of October 1, on the use of decarbonizers. Mr. Kress states that he has used a solution of $\frac{3}{4}$ ounce to 1 gallon of oil with apparent satisfactory results. Using a mixture of the mentioned amount would not result in harmful effects, but on the other hand would it have any beneficial effects? I think not. He states that when he used 10 ounces to the gallon of oil the engine overheated badly. This was due to the solution rendering the oil practically useless in its lubricating qualities. It cuts the oil, makes it thin and when a quantity such as 10 ounces is used renders the oil almost a solvent. Three-quarters of an ounce would not prevent the accumulation of carbon. "Let the oil alone—if it is good oil" ought to be the rule for everybody. If the decarbonizer is used once a week in the regular way it will prevent carbonization. Given a cylinder crusted with carbon and its removal is difficult and the only workmanlike job that can be done is to dismount and scrape. The writer recently had a case where the cylinders on an engine were known to be carbonized and a test was made of a decarbonizer, to prove the makers' statement that it would remove carbon of long standing and give 20 per cent more power. After a run of some 40 miles it was used

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems and invites a discussion of pertinent subjects. Correspondence is solicited from subscribers and others.

according to directions. The following day on the road preignitions were apparent. Upon taking off the cylinders they were found to be coated with thin layers of carbon in the combustion chamber, the intake valve head and piston head. The Radium Decarbonizer was used. Kerosene, used say once to twice a week, depending upon the use of the car, is the best method known to prevent accumulations which in all other solutions do. And there is no need to mix it with oil.—H. Miller.

FLOATING AND OTHER AXLES

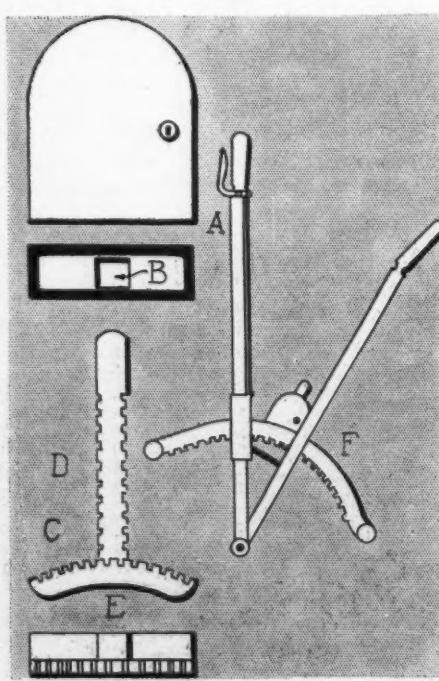
Milwaukee, Wis.—Editor Motor Age—I am considering the purchase of a four-cylinder motor car and, among other things, it has been impressed upon me by an agent that the car he sells is not carried on the live-axle itself, but upon the axle tube. Another agent insists that the latter construction is not used by the best designers, and, according to practice the method used is that of carrying the weight upon the live-axle. Will Motor Age explain how the different ways of carrying the weight are arranged? This is for a shaft-drive car.—C. Frank.

The difference between a floating and non-floating rear axle is illustrated in Fig. 1 and Fig. 2 on this page. Fig. 1 is a non-floating axle; Fig. 2 a floating one. In Fig. 1, A is the driveshaft of the axle,

which, at its inner end, carries the differential spur gear B, and at its outer end is a taper fit for receiving the hub of the wheel C. D is the axle casing or housing. In that the weight of the car is carried through the spokes S of the wheel, it is apparent that, since this wheel is a non-rotating taper fit on the driveshaft A and that the weight of the car rests on the housing D, all of this weight comes on the shaft A at the ball-bearings F. Attention is drawn to the fact that the bearings F are between the axle shaft A and the axle housing D, and that the axle housing D ends at the line D1. It would be impossible to withdraw the driveshaft A without taking the wheel off. In comparison with this, Fig. 2 shows the floating axle, with its driveshaft A carrying on its inner end the differential pinion B. In this construction the axle housing D, shown in black, extends completely into the wheel hub and through it to the line D1, and the ball-bearing F is between this axle sleeve and the hub C, so that the weight of the car does not come on the shaft A at all, but only on the housing B. The hub C of the wheel is rotated from the driveshaft A by a clutch coupling F between the squared ends of the shaft and the wheel hub. With this floating construction the shaft A can be withdrawn with ease by simply removing the hub shaft, and the wheel C remains intact supporting the car through the housing D. The advantage of a floating axle construction is the saving of power, in that there is less friction on the driveshaft A. It is also a great advantage with these floating constructions to withdraw the shaft A endwise through the wheel hub without the dismounting of the axle in the least. It is also possible in floating constructions to remove the differential gears without dismounting the axle.

ALCOHOL PREVENTS FREEZING

Tarrytown, N. Y.—Editor Motor Age—Timely warning at this season of the year is necessary regarding the freezing of radiators. This can be positively prevented by the use of anti-freezing mixtures, many of which are suitable. The most widely used and easily obtainable preparations are calcium chloride, glycerine and wood alcohol, the last being the most favorable because there is no effect on either the rubber connections or the metal piping; whereas calcium is apt to attack the metal, and glycerine in time dissolves the rubber hose connecting the engine with the radiator. A 10 per cent solution of alcohol will withstand a temperature of 15 degrees above zero. A 25 per cent solution will withstand a temperature of zero and a 40 per cent solution a temperature of 24 degrees below zero. In general



IMPROVISED CAR LOCK

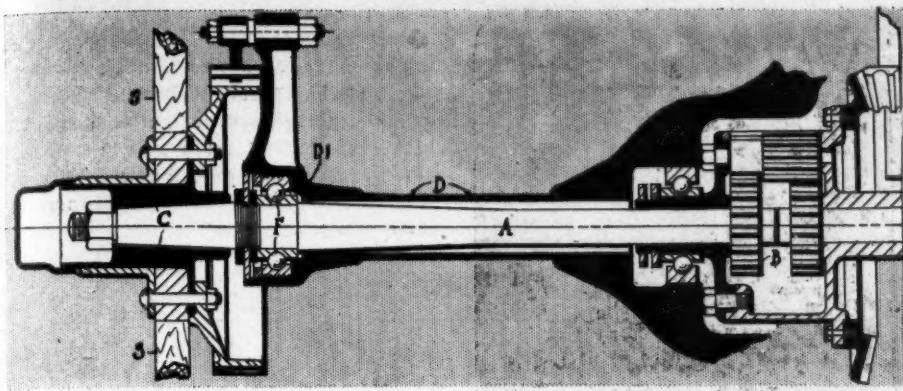


FIG. 1—NON-FLOATING TYPE OF REAR AXLE

a 25 per cent solution will be sufficient for all occasions. With cars using thermosyphon cooling one filling of the radiator with the alcohol solution should last practically all winter. Any loss of radiator supply should be replaced by equal parts of alcohol and water.—J. D. Maxwell.

LIKE ZENITH CARBURETER

Lafayette, Ind.—Editor Motor Age—I have read with great interest the account in a recent issue of Motor Age of the Zenith carbureter, as it comes nearer to being perfect than anything of the kind yet designed. The double carbureter of the Stearns is pretty effective—so is the Schebler and some others, but they all depend upon an automatic spring opening auxiliary valve, and every motorist of experience knows how variable a spring is. It seems to me that the accepted carbureter is, up to date, the lamest adjunct of the gasoline motor—yet this device, outside of the engine proper, is most necessary to its effectiveness at all speeds and at every point of the throttle radius. By publishing information such as this about the Zenith carbureter, you are to be highly commended and are placing motorists under great obligation.—Henry Dudley.

LUBRICATING SYSTEMS

Indianapolis, Ind.—Editor Motor Age—The recent stringent measures taken by the police of New York city against the drivers of machines emitting smoke from their exhaust and the probability of equally stringent action on the part of local governments in other districts, renders it necessary for manufacturers either to subtract from the efficiency of their cars or to revise the systems of lubrication which they have adopted. Since in the great majority of cases the only sign of sufficient lubrication for the engine has been the emission of a slight blue smoke from the exhaust, makers, in many cases, advise customers to make sure that their exhaust is smoking continuously. Realizing the hardships that such regulations impose upon makers of such cars, it is not out of place to consider the various general efficiencies of lubricating systems in vogue. The most usually employed is the splash system, in which the connecting rod-ends whip the surface of oil in the crankcase, so throwing it to the cylinder

walls and other moving parts. In the crudest form—the most common, by the way, of this system—the oil is fed direct to the crankcases and only about 5 per cent of it is effective for lubrication. If the oil level is too high, the engine will foul and the exhaust smoke; if too low, the engine gets no oil, with disastrous results. The anti-smoke properties depend entirely upon the accident of the driver accurately gauging the feed to the crankcase to supply oil as used, a condition which varies, however, with the immediate mechanical quality of the car and also with different oils. In an improved form the oil, in considerable quantity, is carried in a lower chamber or sump, whence it is automatically pumped to the crankcases, being kept therein at a constant level by means of a simple overflow device. This system is infinitely better than that previously mentioned, since about 60 per cent of the oil carried may be used before trouble will occur. But the question of a smoke exhaust depends upon a very accurate gauging of the capacity of the overflow from each and every one of the crank bases. Moreover, there is in this as in every splash system, the serious disadvantage that the copiousness of the lubrication bears but little relation to the work imposed on the engine. Attached force feed lubricators entail a complication of tubes likely to clog or leak and again depend upon an accurate setting, which necessarily varies with different engine speeds and for which a happy average only can be struck, a state of affairs not in accordance with the high efficiency necessary with the modern motor

car built for a critical purchaser. A very satisfactory system in every way is that in which a force pump draws oil from a sump, forcing it by means of suitable ducts in the main bearings through passages in the crankshaft to the crank pins, thence to the piston pins, whence it escapes back to the oil reservoir, the cylinders being lubricated by the oil thrown by centrifugal force from the crank webs. Since the force pump is driven from the engine, the pressure in the oil system is directly proportional to the speed of the engine—the flow equally so, as is also the amount thrown from the crank webs to the cylinders. It is this system—to some makers a new idea—which was developed on the Marmon car some 6 years ago and which it has always used. It is this system also that has rendered possible—as records show—the extraordinary speeds for extended periods which have been made upon the Brooklands track in England. With it not only is perfect lubrication of every engine part absolutely insured, but the whole quantity of oil in the system may be used up before lubrication fails. Provided the by-pass is correctly set, it is impossible to make the engine smoke; the whole system is integral with the engine without exposed pipes to leak, or indeed any to clog. Once tested and the by-pass set, the driver may forget once and for all, except for a very occasional replenishing, his lubrication system, and also be happy in immunity from an annoying arrest for an offense which is primarily due to the maker neglecting to use the best available system for that most important of all the functions in the operation of motor car mechanism—lubrication.—Herbert H. Rice.

TWO-CYCLE MAKERS

Marion, Pa.—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, give me a list of concerns manufacturing a three or four-cylinder, two-cycle engine for motor car use?—F. Y. C.

The Elmore Mfg. Co., Clyde, O.; Atlas Motor Car Co., Springfield, Mass., and the Sunset Automobile Co., San Francisco, Cal., are makers of two-cycle engines. In addition to these might be mentioned the Bailey company of Springfield, Mass., and several smaller concerns who build few motor cars each year.

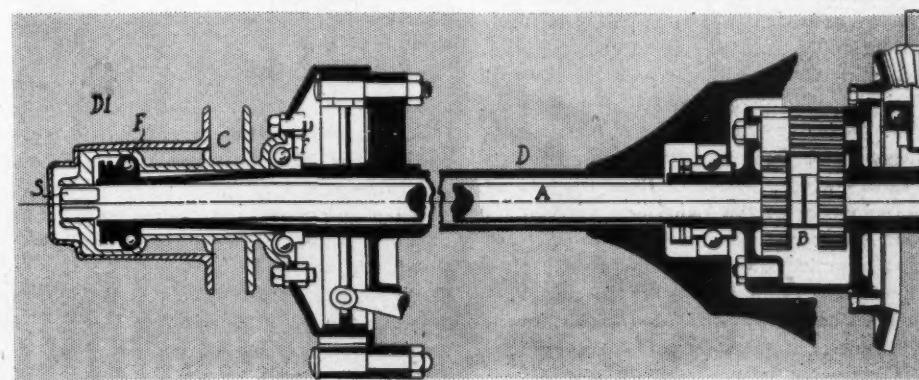


FIG. 2—FLOATING TYPE OF REAR AXLE



FIFTEEN-PIECE BAND RIDING AND BEING HAULED IN MODEL G GLIDE AT CRESCENT CITY, ILL.

Enterprising Editor—The editor of the Lancaster Teller at Lancaster, Wis., R. L. Pollock by name, couldn't get his printing press motive power to work last week and rather than miss an edition, backed his roadster to the side window of the shop, applied a belt to his motor and got the paper out on time.

One Evil Remedied—Announcement is made that the dozen or more motorists of Northampton, Mass., who banded together and had a conference with the mayor and the superintendent of the street railway company have succeeded in their efforts to have the brilliant blinding electric searchlights in present use on the street railway lines dimmed. The motorists contended that they were a constant source of menace and danger to them at night and that they were responsible for many accidents.

Club in Natchez—At a meeting of the car owners of Natchez, Miss., called by Robert B. Bridge, one of the pioneer motorists of the state, it was decided to organize a club in Natchez, and to make it a branch of the American Motor League. The officers elected were: S. H. Lowenburg, president; S. H. L. Lamdin, vice-president, and Dr. W. H. Aikman, secretary-treasurer. Only one committee was appointed, a committee to draft proper constitution and by-laws. The members of this committee are: James S. Fleming, chairman, Dr. R. D. Sessions and Robert B. Bridge.

Women on Long Run—It is the usual custom of the press to feature the participation of the fair sex in a long and punishing run as a "plucky performance." So it is; but previous stunts of this character were thrown into the shade on Saturday week, when no fewer than forty-two women—wives, sisters and sweethearts of the members of the Lancaster Automobile Club—took part in the "ladies' run" of that organization over a route 135 miles in length. From Lancaster the route led to Harrisburg by way of Elizabethtown, Lemoyne, Shiremanstown, Mechanicsburg, Carlisle and Boiling Springs, the dinner stop. The return trip was made via Mount

Holly, York Springs, Abbotstown, Thomassville, Gettysburg, York, Wrightsville and Columbia. The going was good except while crossing the mountains at York Springs, when several of the cars were disabled and delayed, but pluckily continuing after repairs were made, reached home about midnight.

Test Case in Ohio—A test case was brought under the new Ohio motor law this week at Bucyrus, O., against T. M. Drolesbaugh, for operating his car without a state tag. The case came up for hearing before Judge Babst of the common pleas court, who held the law constitutional. The case will be appealed to a higher court, it is said.

Club Opens a Bridge—Through the efforts of the Wilkes-Barre Automobile Club the Market street bridge across the Susquehanna river at that place was opened to free travel last Saturday. The club has done and is doing excellent work along this line, its object being to do away forever with the collection of toll on all bridges and roads within 25 miles of Wilkes-Barre.

Wise Mail Carrier—Charles H. Moore, mail carrier on route No. 4 south of Toledo, has asked permission to cover his 24-mile route in a motor car instead of the regulation vehicle. Special authority from Washington is required before the car can be installed into service. The postmaster has made the request of the department and there is little doubt but it will be granted.

Time Trials Instead of Meet—Time trials for all classes of horseless vehicles took the place of the proposed race meet matinee of the Milwaukee Automobile club at State Fair park on October 10. After a big meet and 24-hour contest 2 weeks before, Milwaukee owners and agents did not feel like going to more expense so late in the season and the club dropped the idea of a formal meet and program. The Pope-Toledo owned by O. Z. Bartlett, a well known grain man, and driven by Harry Nelson, gave two 5-mile

exhibitions of its speed. Fully equipped, the car made the first 5 miles in 5:35 and the second in 5:29½, on a track that was positively bad. The track is being worked and a drainage system installed and the best time, 1:03½, for a mile was considered good. There were a few short races and motor cycle events in addition to these trials.

Foolish Motorists—"Rushing the gates" has become a favorite pastime at Toledo, among the foolhardy ones of the city. When a boat approaches the bridge the gates to the draw are closed and traffic comes to a standstill. The game is to rush at full speed through the gates before they can be closed. As a result of accidents and many hairbreadth escapes the police have called a halt on the dangerous practice.

New Road Planned—Engineers of the Wisconsin state geological survey, under direction of W. O. Hotchkiss, chief of the highway division, are making surveys and other arrangements for the proposed model highway in Milwaukee, extending from the city limits, at the beginning of Grand avenue, 5 miles westward to the county limits. The road will be a boulevard, 85 feet wide, with rows of trees, perfect grade, reinforced curbing and other features of the city boulevards. It is an experiment that will be the basis of an extensive system of highways in Wisconsin. At present the highway is the chief thoroughfare for golfers and members of other elite clubs that lie outside of the city. The road will be of macadam, with a binding of either tar, asphaltic oil or asphalt. It will be ready for traffic in about 2 years.

Packard Pulls Plow—The shops of the Packard Motor Car Co., of Detroit, Mich., are again being enlarged by several additions. In the rear of the present double quadrangle of shops, several two-story buildings are now nearing completion. These will be used as additions to the machine and body departments and will also greatly facilitate the manufacture of Packard trucks. Some time ago the Packard company purchased a large tract of ground on the opposite side of the boulevard from the main factory. Until recently this only has been occupied by the new power plant. Last week, however, ground was broken for the erection of the first of a series of buildings on this side of the boulevard. With the triple purpose of testing trucks, giving the occasion a little extraordinary ceremony and performing necessary work, the initial plowing for the excavating was done by hitching the plows to Packard trucks. After the hard clay ground of the Packard ball ground had been plowed, scrapers were attached to the trucks and the dirt carried away by this unusual motive power. The present Packard factory is nearly six times as large as the original plant erected in Detroit in the fall of 1903. At

that time it contained 100,000 square feet of floor space, which, by successive additions, has been increased to nearly 600,000 square feet or over 14 acres. There are now employed 2,700 men in the manufacture of the 1909 motor cars.

Railroad Enterprise—More than ordinary interest attaches to the fact that large motor inspection cars have been brought into use on some Ohio railroads, for the use of officials. The machine has the appearance of the ordinary motor car but is fitted with wheels adapted to the tracks. It will seat six persons and will make about 40 miles an hour. A 10-gallon gasoline tank suffices for a hundred-mile run, and the cost is small as compared with the use of special trains for this purpose, the previous practice.

Motor League Busy—The Motor League of Rhode Island is a real hustling organization, and besides seeing that every Rhode Island motorist who pays a fee under the new state law does so under a formal and legal protest, has undertaken to have every town clerk in the state send it information and data upon what action has been taken or is being done by the town council in the matter of posting guide boards at highway corners. The town councils are required by law to see that such sign boards are posted and the league intends to see that the towns obey the law to the letter.

commendable Act—Mayor A. J. Horlick of Racine, Wis., president of the Horlick Malted Milk Co., and an enthusiastic member of the Racine Motor Club, has offered a reward of \$100 personally for the arrest and conviction of a speed-mad chauffeur who ran down an aged man at night and disappeared. To preserve the good opinion of the motor car now extant, the mayor is offering rewards and making personal efforts to stop all forms of motor driving not in conformance with written and unwritten laws, and the people of his city and the entire state appreciate it. He is besieged with letters from prominent owners commanding his action.

Looks Ahead—Plans are already afoot to boom next Decoration day's annual climb of the Wilkes-Barre Automobile Club on Giant's Despair. The president, George F. Lee, and Thomas A. Wright, chairman of the club's contest committee, have been appointed a committee to arrange for the event under the auspices either of the A. A. A. or the A. C. A. Club sentiment seems to favor internationalizing the event, it being the general opinion that a duel between foreign and American cars would make the event even more interesting than it has proved since it became an annual feature. Messrs. Lee and Wright have been given carte blanche to make such arrangements as they deem desirable, and with that object in view will go to New York shortly to discuss the matter with the heads of the two associations. The club is back of a project to build a good road between this city and the Dela-

ware Water Gap, to accommodate New Yorkers and Philadelphians traveling this way, and in connection therewith are discussing plans for building a \$50,000 clubhouse and garage in the central portion of the city.

Another Postoffice Test—Robert Bryson, postmaster at Indianapolis, has arranged to lease two motor cars from the Overland Automobile Co. in order to conduct a test of collecting mail. The test is to last 1 year and if satisfactory several cars will be purchased. The postoffice will employ professional drivers and the construction of the cars will include a closed body similar to the mail wagons now in use.

Cream City Club to Meet—The annual meeting of the Milwaukee Automobile Club will be held on October 29. This is the sixth annual meeting, the fourth as an incorporated body. The terms of Directors Lee Fuldner, president; James T. Drought, secretary, and Clarke S. Drake, who are considered the mainstays of the body, being its founders, expire, and they will undoubtedly be re-elected. The club has had a successful year and its treasury is considerably richer than a year ago because of profitable meets, which have created great enthusiasm in Milwaukee and made it possible for the club to become one of the most important branches of the A. A. A. in the west.

Precedent For Joy Riders—Rather unique is the plea set up by the attorney for a Hartford, Conn., driver who was arrested for using a car without the owner's permission and wrecking it. It was the third offense for the unruly one who about a year ago was fined \$25 for using a Knox car without the consent of the owner and later abandoning it. An appeal from the lower court decision resulted in the sustaining by the higher tribunal with the addition of 90 days in jail. A few days ago the same driver used a Maxwell car which he had been repairing and ran off the road into a swamp. The machine was more or less damaged. About a week later he tried the same stunt and this time ran the car into a tree, damaging it badly. He was brought into court but the lawyer for the defense maintained

that the accused was not criminally guilty inasmuch as he had a perfect right to try out the car he was repairing. The judge sided with the defense but imposed a fine of \$10 for running without a license.

Hazelton Real Mad—In an outburst of indignation, the town board of Hazelton, Ind., has passed an ordinance limiting motor car speed to 8 miles an hour and compelling drivers to sound their horns at least twenty times a minute while passing through the town. The town board has ordered the marshal to enforce the ordinance under penalty of discharge for failing to do so.

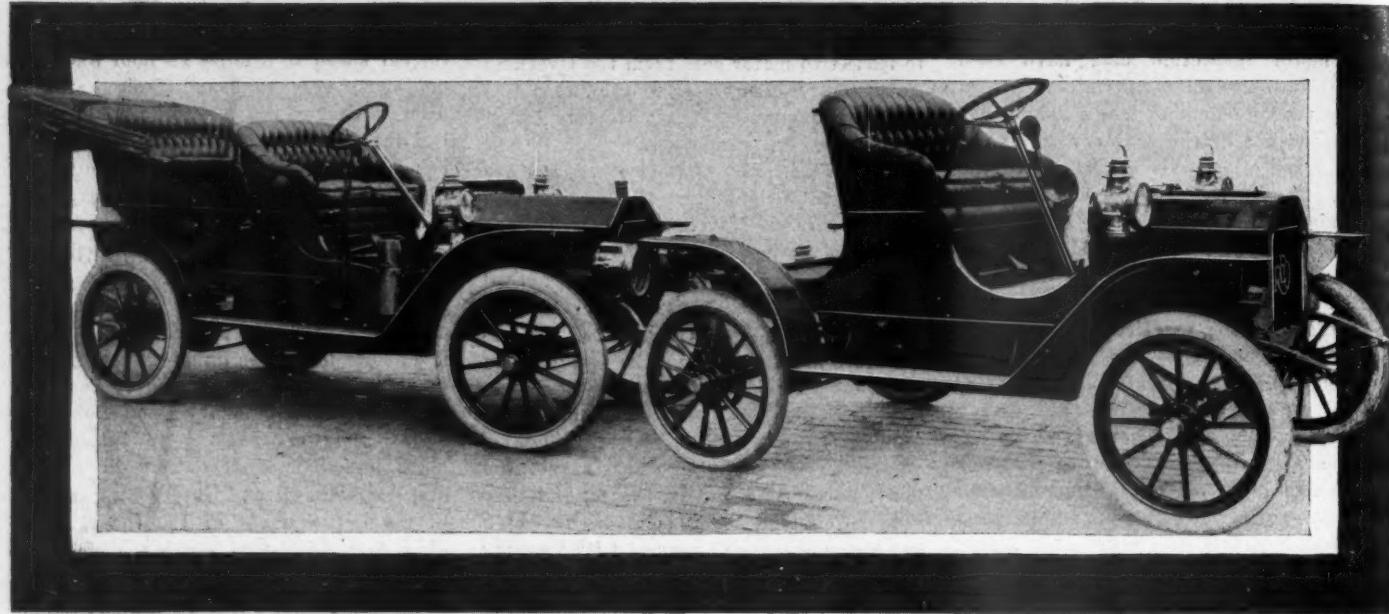
Good Roads Its Aim—The necessity for a thorough rebuilding of the most direct route between Harrisburg and Altoona—that via Lewistown, following the Juniata river—has long been apparent to motorists of central Pennsylvania, and to boom the project the Blair County Good Roads Association is endeavoring to interest all clubs and individual owners in Altoona and Harrisburg and intervening section in the improvement of the roads, beginning first with that portion which runs through the Lewistown Narrows, which is almost impassable for motor cars. At present tourists enroute from Altoona to Harrisburg, or vice versa, are usually obliged to take a long detour south via Bedford and Chambersburg.

Seek Glass Throwers—Toledo motorists have appealed to Police Chief Knapp for assistance in ferreting out certain vandals who for some time have been causing no end of annoyance and damage by sprinkling broken glass on the asphalt pavements, especially on Madison and Collingwood avenues which are favorite runs for motorists. For a number of days tires have been punctured or cut while speeding along these streets, and when the explosions came with such annoying regularity an investigation was made which revealed that the streets had been strewn with broken glass in a manner which could not have been accidental. A heavy penalty is prescribed by law for such vandalism, and Chief Knapp has instructed the entire police force to keep a vigilant watch for the miscreants.



PACKARD TRUCK HAULING A PLOW WHICH BROKE GROUND FOR NEW ADDITION

MOTOR CAR DEVELOPMENT



REO TWO-CYLINDER TOURING CAR

REO ONE-CYLINDER MODEL, 1909 CONSTRUCTION

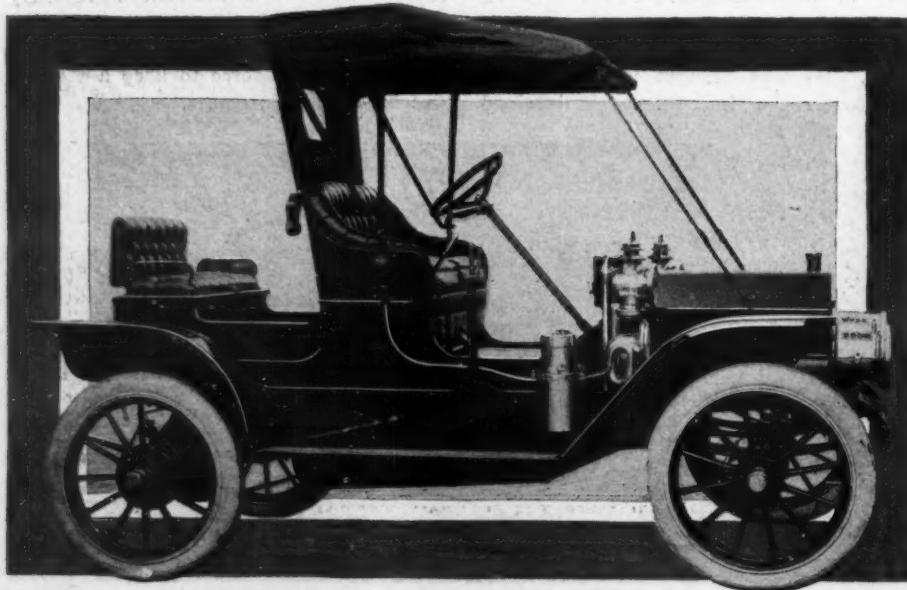
THE 1909 program of the Reo Motor Car Co., Lansing, Mich., will vary but slightly from that of the present season in respect to the styles of cars manufactured. The output will be confined to three models—the two-cylinder 20-horsepower touring car, a roadster with the same chassis, and the 10-horsepower single-cylinder runabout. The specifications of all of these cars are identical with this year's models, with the single exception that the wheelbase in the touring car and roadster will be 96 instead of 94 inches. The Reo chassis occupies a unique position in the motor car industry in that undoubtedly no other chassis with one exception has been altered so slightly since it was brought

out several years ago. It is of that all-American type with an opposed two-cylinder motor carried beneath the body and slightly closer to the rear than to the front axle. The crankshaft is continued through to the two-speed planetary gear-set and drive to the rear axle is through a single chain. The motor, rated at 18 to 20 horsepower, has $4\frac{3}{4}$ -inch bore and 6-inch stroke, the long stroke giving it a peculiarly superior pulling property, specially suiting it for road work and hill-climbing purposes. The cylinders are integral castings with chambers on the upper sides containing the valves, and a particularly clean-cut motor effect is obtained by providing plates for covering the valve

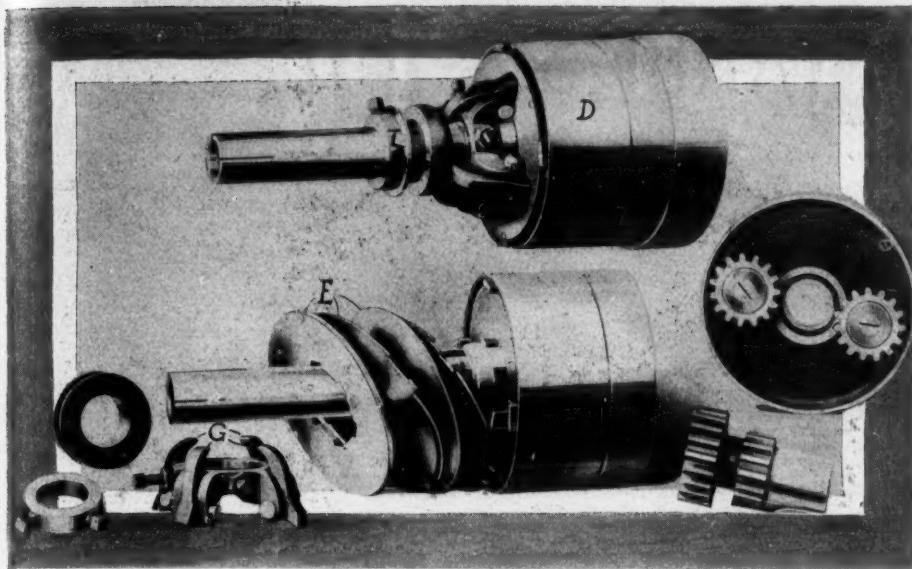
stems and springs. A single carburetor of Reo design feeds both cylinders. This carburetor is of the conventional float-feed type and has needle valve and other adjustments. Ignition is by jump spark with drycells as current producers, and in the cooling system recourse is had to the Reo tubular built-up radiator with gear-driven circulation. Above the motor crankcase is a mechanical lubricator with oil ducts leading to the cylinders and crankshaft bearings. The motor is supported beneath two channel cross pieces of the main frame and may be dropped out of position without interfering with the other parts of the machine.

In the transmission direct drive is obtained by the multiple-disk clutch and slow speed and reverse by the usual clamping bands. The entire transmission is enclosed in an oil-tight case and operates in a bath of oil.

In the running-gear use is made of a pressed steel frame construction with straight side members which framework is supported in front on semi-elliptics and in rear on full elliptics, the latter having the driving strain of the rear axle transmitted to the frame through side radius rods. Braking is through fiber-lined bands acting on the rear wheel drums and through the reverse gear, if necessary. Thirty-two by $3\frac{1}{2}$ -inch tires are fitted. The single-cylinder runabout has a motor with the same bore and stroke as in the two-cylinder type, and uses the same chassis design throughout. It is made with 78-inch wheelbase, has 28 by 3 inch tires, and uses full elliptic springs in front and rear. This car is turned out with



REO ROADSTER MODEL FOR 1909



MAXWELL PLANETARY GEARSET

running-board and large front and rear fenders. The body has a non-divided seat and flat rear deck on which a baggage trunk may be carried. Its fenders connect with a brief running board. In all of the Reo models the false hood is used, which cleverly disguises the motor location and offers a convenient space for the water and gasoline tanks, access to both of which is through a door in the top of the bonnet.

THE MAXWELL JUNIOR

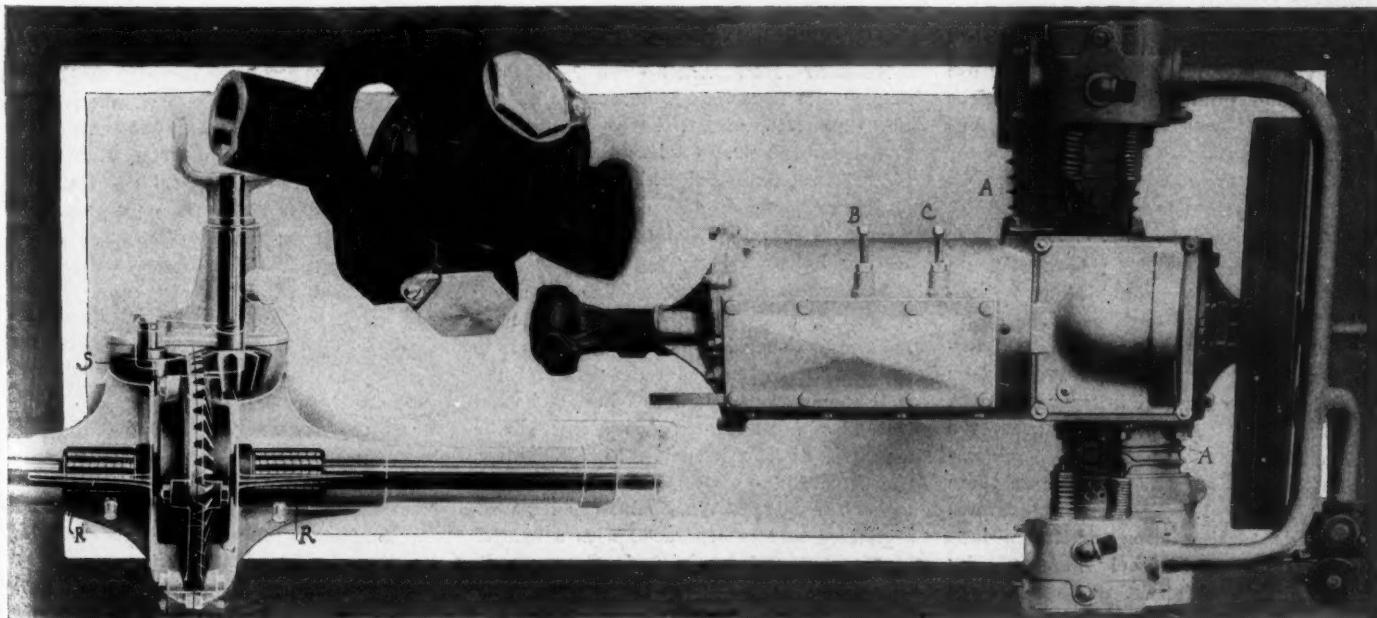
One of the low-priced car sensations for the coming season is the 12.4-horsepower Maxwell, which the Maxwell-Briscoe Motor Co., Tarrytown, N. Y., has listed at the half-thousand mark and with which goes an equipment of two oil side lights, a tail lamp, horn, tools, tire repair kit and body iron for a top. This little car has been christened the "Maxwell Junior," and is exteriorly a duplicate of the little Maxwell roadster of the last 2 or 3 years,

except that in place of the semi-elliptic springs, full elliptics have been installed. This car carries in its make-up the three-point suspension of the unit power plant; thermo-syphon cooling as used for several seasons; a multiple-disk clutch for direct drive work, and a metal body. The wheelbase is placed at 82 inches; 28 by 3-inch clincher pneumatic tires are fitted; the car is regularly built in runabout style, and weighs 1,100 pounds.

The motor is a smaller size than used in the runabout of this season, the cylinders having a bore and stroke of 4 inches, and the rating by the company has been placed at 10 horsepower, although the accepted formula puts it at 12.2. Nothing new appears in this motor over the present two-cylinder opposed type, characterized by integral waterjackets for the head portions of the cylinders and valve chambers, assisted by cooling flanges A on the cylinder walls as far as the crankcase. It is

of the medium speed class, capable of operating from 100 to 1,500 revolutions per minute. The unit power plant is roughly a T, the arms being the opposed cylinders, and the vertical the crankcase with a continuation completely enclosing the two speeds and reverse planetary gearset, which set runs in oil and has the reverse and slow speed bands adjusted through screws B and C with lock nuts which extend through the case. The three points of support are at the cylinder ends on the side pieces of the frame, and at the gearbox rear on a frame crosspiece. The Maxwell float-feed carburetor is used; oiling is through an Essex pressure feed carried on the front of the dash under the bonnet and jump spark ignition from dry cells is made use of.

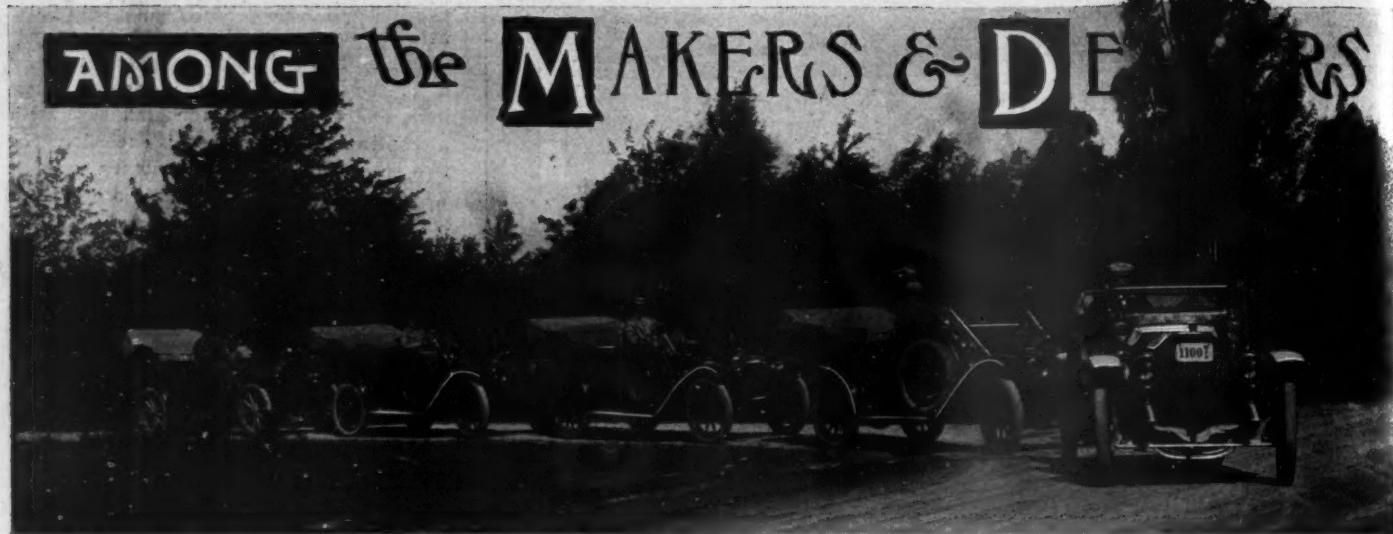
In the transmission, an assembly view of which is given, can be seen at the top D the set complete, and at the bottom the multiple-disk clutch with the plates E separated and the high-speed engaging collar F with its four pivoted arms G seen at the end of the shaft. The usual Maxwell transmission scheme of a propellershaft carrying two universals is used, one of which, illustrated, shows the joint to be made of the usual fork forgings within the arms of which is a tubular center piece in which the oil supply for the joint is carried. In the rear axle construction is shown the dummy pinions bearing upon the back of the differential bevel at a point where it engages with the driving pinion, as are the Hyatt roller-bearings R which carry the inner ends of the axle driveshaft. The torsion rod is not used. In the running gear, such features appear as pressed steel frame construction, full-elliptic springs, 82-inch wheelbase, 10-gallon gasoline tank, tubular front axle and mud apron beneath the motor. The control rests in a side lever pedals and a throttle accelerator pedal. Spark control is on the steering column.



MAXWELL REAR AXLE

PARTS OF MAXWELL JUNIOR CAR

MAXWELL POWER PLANT



FIRST OF THE 1909 OUTPUT OF THE CAR DE LUXE IN PRESQUE ISLE PARK, DETROIT

First 1909 De Luxes—A photograph shows five 1909 models of the Car De Luxe taken at the Presque Isle park, Marquette, Mich. These cars are the first five of the 1909 models to be delivered.

Cameron Tire Size—On the 1909 Cameron the wheels are 32 by 3½ inches instead of 34 by 3½ inches as stated in the company's advertisement. A typographical error was responsible for the wrong figures.

Buys Beaver Plant—The Filer & Stowell Co. of Milwaukee, Wis., has secured control of the Beaver Mfg. Co., builder of Beaver engines, and will conduct the operations of this business in the future, gradually increasing the output to about twenty-five engines per day. A new four-cylinder vertical engine of 40 to 45-horsepower will be added to the line of the same design as the present R. A. type.

Diamond Offers Prizes—Cash prizes offered drivers in the Vanderbilt race by the Diamond Rubber Co. are \$500, \$250, \$150 and \$100, to the first, second, third and fourth in the race, providing, of course, that Diamond equipment is used. Six of the American cars entered will use the Diamond product, it is stated. The company will have its usual tire camps about the course for the convenience of these racers. Diamond demountable rims carrying inflated tires will be used by most of the American cars.

State Company Organized—The State Automobile Co. was organized at Indianapolis last week and has leased the building at 415-419 Massachusetts avenue, formerly occupied by the Boyd Automobile Co. and later by the Buick-Losey Auto Co. Recently Frank Fanning, representing the Chalmers-Detroit, established headquarters in the building and will remain there until December 1. Agencies for several high grade touring cars and for a low-priced runabout will likely be closed by the State Automobile Co. this week. The company has incorporated with \$25,000 capital, Jacob Herff being president; J. R.

Schmidt, formerly with the G & J Tire Co., Premier Motor Co. and the Buick-Losey Co., vice-president.

Will Incorporate—Arrangements to incorporate the business of the Ohio Automobile Co. at Indianapolis were completed last week. The company has conducted a garage on East Ohio street several months. F. M. Leary, T. D. Stevenson and Herbert Woollen are members of the company.

Fighting Garages—There is agitation at Fond du Lac, Wis., for an ordinance to prevent the erection or maintenance of garages in the business district, at least of any but fireproof construction, because of the recent \$250,000 fire which started in the Crescent Auto and Machine Co.'s garage and shops on South Main street.

Becomes a Packard Man—Peter C. Nelson of the sales department of the Electric Vehicle Co., has entered the service of the Packard Motor Car Co., and will be allied with the new branch in Newark, N. J. Nelson had been connected with the local organization for a number of years and is well versed in electrics.

Building New Place—The Wisconsin Automobile Exchange is building a garage on Wisconsin street, between Marshall and Astor streets, in Milwaukee, to be 50 by 120 feet, two stories high, of brick and stone construction. The company is agent for the Stearns, Midland and other lines. Arthur Eckstein is manager.

More Buick Branches—The Tanberg Auto Co., of Eau Claire, Wis., has been appointed general agent for the Buick in western Wisconsin under the policy of the Buick company to establish branch houses instead of agencies. J. C. Tanberg will be manager of the branch. In Milwaukee, the Gove Automobile Co., exclusive Buick agent for eastern Wisconsin, has been reorganized and incorporated with a capital stock of \$5,000 by Richard Gove, E. G. Gove and G. J. Carroll. It will have charge of the Buick eastern Wisconsin branch. The Hokanson Auto Co. of Madi-

son, Wis., will be the branch for southwestern and southern Wisconsin.

Olds Agency Changes—Arrangements have been completed by the Indiana Automobile Co. to handle the Oldsmobile in Indianapolis next season. This season the Oldsmobile has been handled by J. R. Newby, who has made his headquarters with the Indianapolis Motor Car Co. Last season it was represented by the Capital Auto Co.

An E-M-F Addition—Work was commenced last week on an addition to the factory of the Everitt-Metzger-Flanders Co. in Piquette street, Detroit. The new building will be a duplicate of the one in operation—50 by 490 feet, three stories high and of modern mill construction. It will occupy the end of the property and extend clear through from Piquette street to the Grand Trunk railway tracks. Plans had been completed and the contract let for this building before the Northern company with its two factories, had been absorbed.

Pittsburg Items—Arthur L. Bunker and R. P. McCurdy of the Bunker Brothers Co., of Pittsburg have recently established agencies in Uniontown, Pa., and Greensburg, Pa., for the Chalmers-Detroit and the Pierce motor cycles. J. V. Hill and S. M. Amnett, of Wilkinsburg, Pa., have leased the garage in Baum street, East End, Pittsburg, formerly occupied by the Kern Automobile Co., and will handle Oldsmobiles. The Iron City and Tire Repair Co. has secured exclusive agency for western Pennsylvania, eastern Ohio and West Virginia, for the G & J tires. Thomas Hoey is manager of the Iron City. R. G. Wood and Parke C. Wood have formed the American Motor Car Agency which will locate centrally down town. They will handle the American Roadster and also the American Traveler. The Mutual Motor Car Co. has bought the property at 5519 Walnut street, East End, formerly owned by the Colonial Automobile Co., and will handle the Stearns. The Union

Auto Repair Co. will open up for business on Collins avenue, opposite Rodman street, East End, and will manufacture windshields and other motor fixtures. The Consumers Auto Supply Co. is a new concern in the Bissell Block down town.

Estey Joins Pelletier—Following the announcement of last week to the effect that E. L. Pelletier of the E-M-F company will handle the entire advertising of the Studebaker Automobile Co. as well as the E-M-F campaign, comes the further announcement that Mr. Pelletier has engaged as assistant advertising manager for the Studebaker, F. L. Estey, who for several years has been attached to the motoring department of the Chicago Inter Ocean. Mr. Pelletier plans to superintend all Studebaker publicity and advertising from the Detroit office, and Mr. Estey will follow up contests.

Kansas City Changes—Lewis A. Robertson has taken the Kansas City agency for the Franklin. His garage probably will be somewhere on South Troost avenue. F. S. Dey, the new agent for the Pierce in Kansas City, has been looking for a location for a week, but has not yet decided upon permanent quarters. The Palace Auto Co. has moved from 1408 Walnut to 1327 Walnut street. The Buick Automobile Co. has moved from 1108 East Fifteenth street to its new building at the northwest corner of Admiral boulevard and McGee street. The building at 1118-20 East Fifteenth street, formerly occupied by the Midland Motor Co., is now in the possession of the Rambler Automobile Co. The Midland company is occupying its new garage at 1608-10 Grand avenue. Carl J. Simons has assumed the active management of the Maxwell-Briscoe branch. B. E. Stimson of the Maxwell company has

been transferred from the Kansas City house to be manager of the new branch to be opened at once in Minneapolis.

Another Rambler Addition—Thomas B. Jeffery & Co., Kenosha, Wis., makers of the Rambler, have awarded contracts for an additional building to include testing and assembling departments. The building will be 150 by 257 feet in dimensions and one story high, of brick and steel construction, modern in every way. The addition will be ready in 90 days.

New Acme Agencies—Announcement is made by the Acme Motor Car Co., of Reading, Pa., of new agencies established in Savannah and Philadelphia. In the Georgia city the Graham Automobile Co., located at 14 Bryan street, West, has taken over the Acme agency interests and will handle them for the state of Georgia and portions of nearby states. At Philadelphia, the Acme interests will be handled by the Theobald Motor Car Co., which has salesrooms and a garage at 608 North Broad street. The president of the company is H. P. Childs, who is also connected with the Westinghouse Machine Co.

Watkins Will Build Cars—Samuel W. Watkins has severed his connection with the Beaver Mfg. Co. and will enter the motor car business on a large scale, building entire cars. Although the report lacks official confirmation, it is known that Mr. Watkins has been investigating locations at Kenosha, Wis., and soon will close leases for the plant of the defunct Visible Typewriter Co., which was later occupied by the Earl Motor Car Co., also defunct. The plant is considered ideal for the purpose and special machinery purchased by the Earl company remains. Mr. Watkins purchased some claims against the Earl at receiver's sale, and has been promised

financial assistance by Kenosha business men and capitalists. He will be ready for a formal announcement of his plans soon.

Garage at Waupaca—A. M. Hansen is building a garage at Waupaca, Wis., to be 32 by 130 feet in dimensions, two stories high. Mr. Hansen is agent for the Rambler and will conduct a garage and livery.

Takes the Oakland—An agency for the Oakland has been established in Indianapolis by the Independent Automobile Co. The company has established quarters at 216 East Vermont street and will incorporate at a later date. The Oakland has not been represented in Indianapolis before.

Cartercar Changes—The Motorcar Co., builder of the friction-driven Cartercar, has filed papers for an increase in capitalization to \$350,000. The name of the organization had been changed to Cartercar Co. The plant of the Pontiac Spring and Wagon Works at Pontiac, Mich., has been purchased and the work of moving the factory from its present location on Twenty-first and Baker streets, Detroit, will be commenced at once. It is expected that in about 30 days' time all of the equipment will be in the new plant ready to go forward with the work and make deliveries of the 1909 product. A year ago when business as a rule was at somewhat of a standstill in the motor car line, the Motorear Co. increased its facilities nearly 100 per cent. Notwithstanding this fact a night force was required fully 3 months of the year to keep the deliveries within a reasonable time. The location of the new plant is at the juncture of the Detroit, Grand Haven and Milwaukee and the Michigan Air Line railroads. The Detroit and Pontiac electric line also passes the door. The buildings are of brick and concrete.



GATHERING OF FIRESTONE SALESMEN AT THE FACTORY OF THE COMPANY

Top row, left to right—C. B. Kane, G. A. Talbot, M. S. Iles, H. V. Spencer, R. J. Firestone, J. E. McGinnis, A. Apel, E. L. Campion, W. L. Esterly, W. S. Slater. Second row—H. L. Houck, C. L. Harris, O. R. Cook, W. E. Jackson, W. W. Urichter, Charles Habegger, T. Feusteracher, A. R. Rockwell, S. G. Carkhuff, G. C. Calbetzor, W. Wells. Third row—D. T. Keenan, F. Z. Binkard, F. O. Sawyer, A. W. Moore, W. R. Walton, H. S. Firestone, C. O. Dall, W. H. Girdlestone, W. W. Robertson, W. P. Berrien, J. L. Singleton. Bottom row—E. Bosworth, A. G. Partridge, T. J. Glenn, Roy E. Warner, I. S. Roberts, C. L. Bradfield, William Ridge, J. V. Mowe, O. O. Peley.



Motor Car Shop Kinks



WIRING FOR MAKE-AND-BREAK

THE natural procedure of the motorist familiar with high-tension ignition, in wiring up an auxiliary battery for make-and-break ignition, is to use the same voltage that he has found necessary for jump spark coils. If his auxiliary battery consists of six dry cells he will probably wire them in series. If he has had trouble in starting, owing to the carburetor giving an imperfect mixture on priming, series wiring may be necessary, but it is worth remembering that an ordinary battery gives a much larger flow of current than a low-tension magneto, although the voltage is smaller, and for this reason a battery burns away the spark points faster than the magneto. Three or four cells of battery are sufficient for ordinary gas lighting, and by the same token should be sufficient to ignite the mixture in the engine. Six dry cells wired up in series last a very short time, but if they are fairly fresh it is entirely practicable to connect them three in series and two in multiple, thus using but a small fraction of the energy per cell that would otherwise be required. This expedient may be followed until the battery is too weak to spark regularly, and the cells may then be wired in series, thereby enabling the motorist to "get home" within any reasonable distance. It is worth remembering in this connection that the electrical energy used depends mainly on the time the motor is run, rather than on its speed, and that therefore the higher the speed of the car the greater will be the distance traveled before the battery gives out.

TESTING SPARK TIME

If it is inconvenient to test the spark time by reference to marks on the flywheel, a test sufficiently accurate to determine whether or not retiming is worth while may be made by noting the position of the starting crank when the spark occurs. For one cylinder this point may be marked on the radiator, and a stick or stretched string will give the diametrically opposite position. A convenient but not essential aid is a large sheet of cardboard with a hole cut in the center large enough to fit over the starting crankshaft. Two diametrically opposite points may be accurately marked on this cardboard, and when the cardboard has been turned to match the cranked position for one cylinder the other position of the crank is at once shown. It would be possible to give the cardboard a certain fixed position, and mark the starting crank positions on it for the valve timing as well as for the spark. When a car has low-tension magneto ignition and an auxiliary battery, the ignition time for each cylinder may be quite closely determined without recourse to a volt-

Aids for the Amateur

meter, simply by opening all the igniter cut-outs, closing the battery switch, and noting the starting crank position at which a spark does or does not appear when quickly closing and opening the cut-out of the cylinder under test.

CREASING THE SPRINGS

Ordinary grease when used to stop spring squeaks has the objection that it quickly works out, leaving the squeak as bad as ever. If graphite be mixed with the grease until the mixture is quite stiff it will last a good deal longer than grease alone. Best of all, however, is linseed oil and graphite, since this does not tend to eat the band like mineral or animal grease. The graphite should be added to the consistency of a stiff paste, and the oil then serves simply as a binder.

WEAR OF GEAR SHAFT BEARINGS

When the running brake is located at the after end of the gearbox, as is usual, the stresses thrown on the adjacent shaft bearing by braking are considerable, and unless this bearing is of unusual amplitude wear will show itself here sooner than at any other bearing of the gearbox, assuming, of course, that the bearings are plain. This is particularly true if the brake shoes are so anchored as to throw side stress on the bearing. In purchasing a second-hand car one of the first points to be investigated is the tightness or looseness of this same bearing. If it be found loose it is rather likely that the shaft will be found to be cut also. If the bearing shows unduly rapid wear in service the trouble may sometimes be corrected by rearranging the anchorage or the tightening mechanism of the brake shoes to relieve side pull.

TROUBLE BY RUSTY RIMS

Whether the tires be clincher or quick detachable, the rims should be kept clean. It is quite possible for a neglected rim to gather rust so thickly that a sharp flake detaching itself may pierce the inner tube. Even if this does not occur, the rust will tend to chafe the inner tube. It is also possible for a thick flake of rust, partly detached by the tire irons when putting on a shoe, to hold the inner edge of a clinch just off the surface of the rim so that the inner tube is gradually forced under the clinch by the air pressure within. A case was not long ago reported of two successive blow-outs oc-

curing within twenty miles, for which no cause could be found until investigation showed a projecting piece of rust in the rim. If the rust is thick it can be loosened by hammering with a tire iron, and afterwards scraped off with the square end of a flat or half-round file. The rust inside the beads of the rim is not so easily loosened, but it may be reached with a half-round or round file, or with the flat end of a cottor pin extractor. After a final cleaning with a coarse emery cloth, the rim should be shellacked or painted.

STRAIGHTENING A SPRUNG FRONT

When an I section front axle springs it is most likely to be close to the spring seats. Unless it is specially thickened between the spring seats and the steering knuckles it is likely to bend outside instead of inside the spring seats. It is therefore a mistake to correct the axle by bending the central portion. If the center of the axle is dropped bending it will have the effect of spreading the spring seats so that the axle will not fit the springs. The first step in correcting a sprung axle is to note whether or not the distance between the spring seats equals the distance between the springs when the axle is removed. If this distance is correct it should not be changed.

REAR BRAKE BAND SUPPORT

In some cars the rear brake bands are so light that the designers think it unnecessary to provide them with other support than that afforded by the brake drums themselves. The friction of these braking bands may not be an important item, but the resulting wear must be taken up sooner or later; and for this reason, if for no other, it is well to support the bands clear of the drum. The usual advice is to use a spring for the purpose, and this is correct to the extent that this type of band is likely to require a yielding support to permit it to grip the drum firmly when tightened. A light elastic spring, such for example as might be made from coiled wire, is out of the question, since it would stretch somewhat from the weight of the band and would therefore give the latter no definite location. The best sort of support is a bracket forged from light iron strap, stiff enough to support the band definitely clear of the drum, but yielding enough to permit the band to tighten against the drum. It will probably be necessary to provide for a slight rotative movement of the band, as well as a vertical movement, unless the bracket is attached to the band close to the point—e. g., a distant rod—where the band is anchored.





Brief Business Announcements



Los Angeles, Cal.—Fred G. Bierlein will have full charge of all local Reo retail business.

Cumberland, Md.—The Queen City garage has been appointed agent for the Mitchell.

Lansing, Mich.—The People's Auto Co., of Calumet, has been incorporated with a capital stock of \$10,000.

New York—C. Jensen has filed articles of incorporation with a capital stock of \$10,000, and will deal in parts.

Cleveland, O.—Way, Mitchell & Co., who have the local agency for the Republic tires, have opened a tire repair department.

New York—John Dorr, formerly with the Buick company, has been appointed assistant manager of the E.M.F. company at 1709 Broadway.

New York—The local branch of the Matheson company has leased part of the American Locomotive Co.'s quarters at Broadway and Sixty-sixth street.

Corona, L. I.—Louis Turck, who has been teller of the First National bank since it was organized, has resigned his position and will go into the motor car business.

Philadelphia, Pa.—The Penn Motor Car Co., which has the agency for the Mitchell, has taken a lease of the premises at Broad and Cherry streets, and will take possession as soon as the extensive alterations are completed.

Los Angeles, Cal.—The Ollier & Worthington Supply House, which formerly did a wholesale business only, has decided to take up the retail trade also. The company is now located in its new quarters at Twelfth and Main streets.

New York—Charles A. Duerr & Co., who have been acting as agents for several prominent cars, has filed an involuntary petition in bankruptcy. The assets are between \$60,000 and \$75,000 and the liabilities are \$100,000. Lindsay Russel has been appointed receiver.

Brooklyn, N. Y.—The Auto Accessories Co., recently incorporated, is to open a supply store in the building at Broad and Vine streets. This is the building which is also to house the American Locomotive and Oakland cars. George B. Wunder is to be the head of the supply company.

Muncie, Ind.—Thomas F. Hart, J. Madison Maring, T. F. Rose and Ball Bros. are interested in a new factory on a site embracing 14 acres. Most of the building will be entirely covered with glass and will be completed January 1, 1909. Desiring a name for the new car to be manufactured over 1,500 suggestions have been

received by Mr. Hart. Claude E. Cox of Indianapolis will be the chief mechanical engineer.

Richmond, Ky.—B. M. Lackey, proprietor of Kentucky Carriage Co., has opened a garage.

Vincennes, Ind.—The Johnson Auto Co. has been incorporated with a capital stock of \$10,000.

Indianapolis, Ind.—William H. Thomas has been appointed receiver for the Commercial Motor Vehicle Co.

Highlands, Cal.—Leon T. Shettler has closed a contract with Green & True, of this town, for the agency of the Kisselkar.

New York—The Motor Transportation Co. has been incorporated with a capital stock of \$20,000, and will operate a garage.

Albany, N. Y.—The City Autocab Co., of New York city, has been incorporated with a capital stock of \$250,000, and will enter the taxicab business.

Richmond, Ky.—The Richmond Motor and Plumbing Co., A. C. Scanlon and Ben F. Hurst proprietors, has been organized to carry on a large motor business.

Detroit, Mich.—On October 15 the local branch of the Diamond Rubber Co. will remove to the quarters recently vacated by the Cadillac company at Jefferson and Brush streets.

Houston, Tex.—Plans are under way for the construction of a motor stage line from Seminole, Tex., to Roswell, N. M., and there is talk of another line from Midland to Fort Worth and Dallas.

Trenton, N. J.—The United Automobile Dealers' Association has been incorporated with a capital stock of \$20,000. The Owners' Repair and Maintenance Co. has filed articles of incorporation with a capital stock of \$10,000.

Johnston, Pa.—The Somerset Auto Co. has been organized by James G. Holderbaum, Warren Frease, William T. Hoffman and Jay S. Pickering, Jr. It has taken a lease of the Holderbaum warehouse on Court alley and will start in business on January 1. It has the agencies for the Buick, Chalmers-Detroit, Stevens-Duryea, Thomas and Pierce-Arrow.

Two Rivers, Wis.—The product of the Wisconsin Auto Supply Co., which has decided to enter the manufacturing business because of the success of two big trucks built by it as experiments, will be unique in that the machine may not be used only as a truck, but the engine can be arranged without trouble for power purposes on farms, to drive feed mills, saws, pumps, etc. The company will make an appeal primarily to agriculturalists and farmers.

It has been decided to erect a plant next year to manufacture the truck on an extensive scale.

Topeka, Kan.—The Wilson Automobile and Garage Co. has been chartered by the state board.

Rockaway Beach, L. I.—The Queen Motor Works has been incorporated with a capital stock of \$3,000.

Denver, Colo.—The Alamosa Automobile Co., of Alamosa, has been incorporated with a capital stock of \$10,000.

Los Angeles, Cal.—R. J. Leavitt has been appointed agent for the Locomobile, but has not yet settled on the location of his headquarters.

San Jose, Cal.—W. F. Hunt and Blodahl Kellar have leased the building now in course of construction on North First street, and will open a garage.

Pittsburg, Pa.—The Belden Motor Car Co. has been formed for the purpose of entering the motor manufacturing trade. The nominal capital is from \$5,000 to \$300,000.

Spokane, Wash.—Plans for the erection of a garage on the south side of Front avenue, between Wall and Post streets, have been made. The company will handle the Cadillac.

Philadelphia, Pa.—Charles Spencer has resigned as agent for the Jackson, and in the future the car will be represented by Prescott Adamson, who also handles the Columbia, Babcock and Renault.

Boston, Mass.—W. M. Turner, who was formerly in charge of the White company's agency in this city, has been appointed representative of the Cleveland Motor Car Co. He will start in active business on October 15.

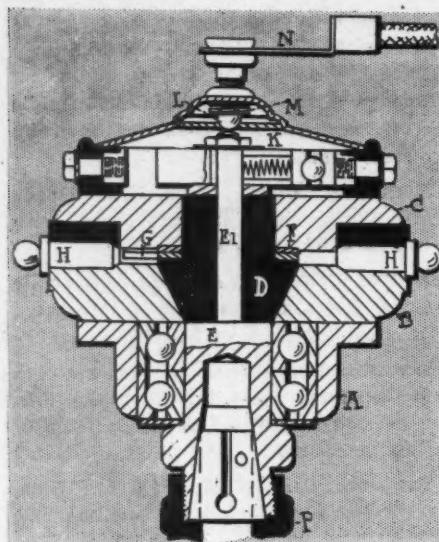
Trenton, N. J.—The Adams Electric Co. has leased the premises at 237-239 East State street, and as soon as alterations are completed will open a garage and supply house. It already has secured the agency for the Detroit electric and the Regal.

Albany, N. Y.—The Auto Upholstery Co., of Brooklyn, has been incorporated with a capital stock of \$2,000. Another concern to file articles of incorporation is the Long Island Auto Supply Co., also of Brooklyn, which has a capital stock of \$25,000.

Scranton, Pa.—John H. Brooks and Robert K. Amerman have bought out the Scranton garage and in the future it will be known as the Scranton Automobile Co. The Curt & Adams Co., in which Messrs. Brooks and Amerman are the chief investors, are to handle the business of the new owners.



Development Briefs



LEHMANN'S DISTRIBUTOR

LEHMANN DISTRIBUTER

The Lehmann Mfg. Co., New York city, manufactures distributors for four and six-cylinder motors, of which a vertical section is given. The body or support A has bolted to it a hard rubber insulation B which is grooved to receive the similar insulation C and coned to take the vulcanite cone part D which revolves with the shaft E1. This shaft E1 is a continuation of the shaft E, but of smaller diameter, the large diameter part being supported on a double race of ball-bearings. Secured to the vulcanite cone F is a distributing disk G and attached to the under surface of C is a collecting disk F. The rotating disk G wipes the ends of the terminals H. The timer portion K is of regular construction as used as in the Lehmann timer. For the purpose of taking off the ground wire a small ball L is held against the shaft E1, through the spring M, and a spring connection N couples for the wire. In attaching this distributor to its shaft the usual method or keying or pinning is dispensed with, and in place recourse is had to a split cone O, which fits within the tapered bored end of this shaft E. A jam nut P serves to anchor the split cone O to the driveshaft.

PELE TONNEAU HEATER

The Automobile Heater Co., Chicago, Ill., manufactures a simple style of heater for tonneau cars and limousines which makes use of the regular water system employed for cooling the cylinders in cars. The heater A, placed in the floor of a car, establishes a connection with the water circulation system through the pipes B and C which connect with the return pipe E before it reaches the radiator E.

In this way a part of the hot water from the cylinders is directed out of its short cut to the radiator and forced to pass through the aluminum heater in the car floor. The heater complete weighs but 10 pounds and regulations are furnished so that any degree of heat desired can be obtained.

ROCHESTER GEAR TIMER

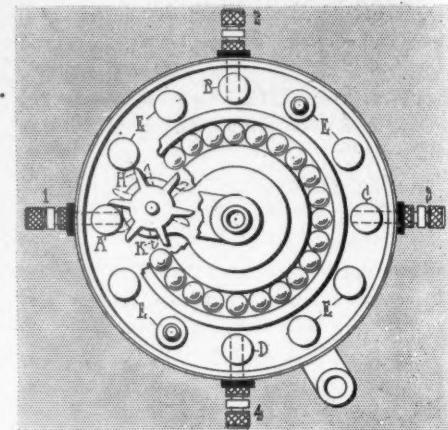
The Rochester Timer Co., Rochester, N. Y., manufactures a unique type of timer for one, two, three, four and six-cylinder cars, in which the revolving contact is in the form of two slightly staggard pinions or star wheels H and K, which mesh with an internal gear effect formed by the four binding posts A, B, C, D, and the eight intermediate bronze cylinders E which play the role of teeth for engaging the star wheels. The stationary contacts A, B, C, D, are cylindrical bronze blocks insulated with hard fiber and the binding studs, 1, 2, 3, 4, are brass and thread into these blocks. The star wheels H and K, of hardened steel, are sufficiently staggard so that one of them makes the contact and the other breaks it. The two wheels are held together by a torsion spring which insures this positive wipe contact irrespective of the wear. The revolving shaft carrying the star wheels is supported on a race of ball-bearings.

D. D. RECTIFIER

The D. D. Rectifier Co., St. Louis, Mo., has on the market the D. D. rectifier No. 5, is used for charging batteries for alternating current. The rectifier consists of an economizer which reduces the voltage from 110 or 220 to as low as required. The outfit will charge from one to fifteen batteries of the regular ignition type. A smaller size used for charging one to three batteries is also manufactured.

RAHN OIL MOTOR

Peter and George Rahn, Racine, Wis., have completed and are demonstrating a new type of motor in which the carburetor and electrical equipment are absent. The motor is of the ordinary four-cycle type

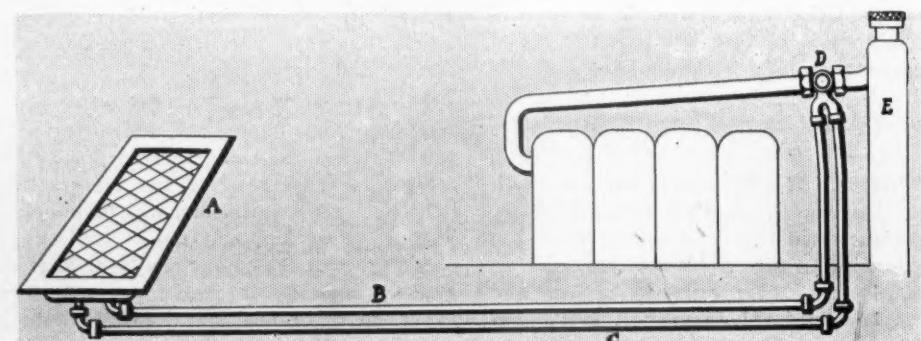


ROCHESTER GEAR TIMER

and operates with crude oil, sold from 2½ to 3 cents a gallon. The oil is injected into a round east iron bulb in quantities of two and three drops or more at the will of the operator. Ignition is accomplished by a hot bulb heated for 4 minutes by a blow torch, the heat from the combustion maintaining the heat of the bulb.

1909 STEWART SPEEDOMETERS

The Stewart & Clark Mfg. Co., Chicago, Ill., announces its 1909 speedometers, which include the old models and two low-priced new ones, the latter known as Nos. 11 and 12. The No. 12 instrument is designed to indicate speeds from 0 to 60 miles per hour, and has the new trip recorder and resetting device. Because the indicator is mounted in the center of the dial the scale is three times as long as ordinarily used. The No. 11 instrument has a 50-mile scale and 10,000-mile odometer. It is 3 inches in diameter. These two new models together with the old one will all be driven through the Stewart flexible shaft and swivel joint, both of which are covered by a 5-year guarantee. The improvements in the 1908 models include the use of a unique trip recorder of three dials, indicating the mileage in miles, with an automatic resetting device. These models will be equipped with a maximum speed hand.



THE PELE HOT-WATER MOTOR CAR HEATER